

## TASMANIA GOVERNMENT - LIFTING LITERACY - COMMUNITY CONSULTATION

JO ROGERS.

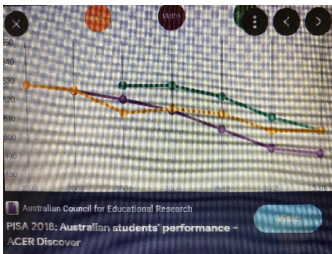
This submission addresses

- 1) The evidence based foundational F- Year 2 English Curriculum and the foundational F - Year 2 Mathematics Curriculum,
- 2) How the foundational F-2 English and Mathematics Curriculum relates to reaching the target by Year 7, all students will meet a reading ability that is above the National Proficiency Standard by no later than 2030,
- 3) How an evidence-based F-2 English and Mathematics Curriculum can achieve the Goals of the Alice Springs (Mparntwe) Declaration 2029, that ALL young Australians become successful life-long learners and informed members of the community, goals which require every child to be taught to read by their teachers at every primary school.

### BACKGROUND

At present, Australia's Primary Education system is failing, not slightly but majorly and almost 50% of Tasmania's population is functionally illiterate.

In a first world country, this situation must be regarded as completely unacceptable.



In Australia, OECD PISA 2018 Results: 41% of 15-year-olds did not meet National Proficiency Standards in Reading and 46% of 15-year-olds did not meet National Proficiency Standards in Mathematics.

These students did not learn to read and compute during the 7 years they attended Primary School.

- If this problem is not addressed by Education departments now, these trends of illiteracy and innumeracy will continue and by 2030 be worse.
- At present, English Curricula in all States, except recently NSW, continue to promote the non-evidence-based ideologies of Constructivism in the English and Mathematics Curricula with non-evidence based Whole Language-Balanced Literacy in the English Curriculum.
- If the ACARA National and States' English and Mathematics Curricula, (especially foundational F-2), reform now, to only scientific evidence based best practice for these two subject that required accuracy, these problems will be addressed well before 2030.

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## **MY PERSONAL BACKGROUND**

I am a qualified Primary and Special Education Teacher, with face-to-face teaching experience for 51 years from 1968 to 2019.

I taught in F-2 classrooms (Tier 1) **before** Constructivism and Whole Language came into Primary Education in Australia in 1980's. Then I taught at risk children in Special Education Units (Tier 2), and when they closed, did private teaching of dyslexic children (Tier 3) as an LDA Consultant for 30 years.

As remedial Special Education teachers, we continued Direct Teaching and Phonemic Awareness and SSP Phonics teaching because these pedagogies always were effective.

During the 1970's **every child** was taught the foundational Literacy and Numeracy Skills by the end of Year 2, so they were able to build upon those skills from Years 3 to 6. Any child struggling during Year 1 was immediately given extra small group teaching by the department head teacher for 12 months, ensuring they kept up with their peers. (Tier 2)

During the 1980's, Constructivism and Whole Language ideologies were introduced into Australian Primary Education.

By the 1990's concerns about declining reading standards began to emerge. In 1996 a National Survey found that 25% of children in Year 3 and 29% of children in Year 5 were illiterate. (ABS) In 1997 a National Survey found 20% of young adults had extremely poor literacy skills with another 28% functionally illiterate. (ABS) All testing since, shows Australian school children's continual decline in Reading and Mathematics Skills.

If every child does not learn the foundational Reading, Spelling, Writing and Mathematics during the three years of F-2, they cannot build upon those skills from Year 3. They fall further and further behind their peers each year.

All those PISA illiterate and innumerate 15-year-olds who failed to reach Reading and Mathematics Proficiency Standards would have not mastered some or all foundational Literacy and Numeracy Skills. They would all have suffered anxiety, depression, and psychological damage to their self-esteem.

## **WHAT IS CONSTRUCTIVISM?**

Constructivism is an ideology that children learn best through their own creative experiences, with testing to find out if they have learned, discouraged.

## **WHAT IS WHOLE LANGUAGE/BALANCED LITERACY?**

Whole Language is an ideology that as children learn oral language naturally, so too, they learn to read. Advocates extrapolate children who fail to learn to read at school, do so because their parents did not read to them from birth.

### **WRITTEN LANGUAGE NEEDS TO BE SYSTEMATICALLY TAUGHT**

Cognitive Psychologists know although Oral Language is learned naturally, Written Language must be systematically taught, in order to be learned and that ALL children learn to read following the same cognitive process.

**The ideologies of Constructivism and Whole Language, now called Balanced Literacy, have had several decades in Australian Primary Education to prove their efficacy,**

#### **BUT HAVE FAILED.**

This is not the fault of any Primary School or any Primary Teacher, as they have to follow the Curriculum they are given.

**The alphabet, dictionary and number system do not change over time.**

### **THE NATIONAL INQUIRY INTO THE TEACHING OF LITERACY 2005**

Dr Ken Rowe (ACER) led a National Inquiry into the Teaching of Literacy in 2005. The Report was tabled in Federal Parliament and all recommendations were agreed by COAG Education Ministers in 2006.

**The main recommendation was:**

**'To teach the systematic, direct and explicit phonics instruction so that children can master the essential alphabet code-breaking skills required for foundational reading proficiency.'**

### **WHAT HAPPENED?**

Whole Language advocates in English organizations, Teacher Unions, State Education Departments, Teacher Education, Primary Principals Associations, Educational Research organizations and Primary Schools ignored the NITL.

Whole Language advocates added the word 'explicit' to their documents, advising 'systematic and explicit instruction', but omitting the NITL key word, 'phonics'.

The name changed to Balanced Literacy, adding 'letters and sounds' into documents, but still had its flawed base.

They now advocate to teach Whole Language/ Balanced Literacy with 'embedded or analytic phonics' and to teach 'spelling through meaning'.

Poor test results are blamed on lack of funding, low teachers' salaries, low ATAR scores, large classes of 20, parents not reading to their children, lack of books in the home, or the children's lack of sleep, anxiety, inattention, screen time, society's ills; anything but inefficient teaching ideologies.

### EVERY STATISTIC HAS A HUMAN SIDE

Andrew was 8 years old in Year 2 and had coped well with kindergarten. He had a loving homelife and had been read to from babyhood.

In his 3<sup>rd</sup> year at school, he could not read or write. Every day he would write his name on the first line of his writing book, and keep writing his name down every line, whilst the other children wrote their stories.

His teachers told his parents not to worry because one day 'it will click'.

The Reading Recovery teacher read the PM book, 'The Three Billy Goats Gruff' with him daily, pointing to the words and telling him to join in. After 20 weeks he had memorised the book and was ticked off as having successfully read Level 15, even though he could not read any other book on Level 15, or any book.

He looked so anxious, his shoulders hunched, his head held low, so I said to him, "Andrew, I can teach you to be a good reader."

Looking up at me, he said, "It's OK. I can cope with being no good."

The look on his face was of pure anguish.

In his 3<sup>rd</sup> year of school failure, this is what he thought of himself, because he learned it every day at school.

All he had done was to attend his local Primary School. All his parents had done was to send him.

All his fine young teachers had done was to follow the English Curriculum, which told them nothing about teaching him to read and write.

**I taught him to read following the evidence based Simple View of Reading, to decode words using Phonemic Awareness, Systematic Synthetic Phonics Skills which then link with vocabulary to gain meaning.**

**From this approach he also learned to spell words so he could write stories. I taught him the foundational Mathematics Concepts and Operations using Direct Teaching.**

Andrew caught up to his peers by Year 5, and his parents tell me he is doing very well in Year 10 and he is a happy, normal teenager.

Andrew was young enough to avoid the permanent damage to his self-esteem and mental health that illiterate children and teenagers suffer. \* (MQ Centre for Reading June 2021).

School refusal, misbehaviour in the hope of being sent out of class, or suspension, are their only ways of avoiding the daily humiliation of appearing 'dumb' in front of their peers.

Varying academic opinions and debates are acceptable, but not in this instance when there are preventable casualties of young Australian children, and their teachers.

### **'SEVERAL WAYS TO TEACH READING'**

Modelled Reading, Shared Reading, Guided Reading, Reciprocal Teaching, The Language Experience Approach, Close Reading, Teaching Learning Cycle, Reading Conferences, which are all based on The Four Resources ideology, which before 2005 was called the Three Cueing System. 1) Make meaning from context. Does it make sense? 2) Make meaning from syntax. Does it sound right? 3) Make meaning from visual part of words. Does it look right?

The fourth element, grapho-phonics, has recently been added, but 'only to be used for confirming predictions from semantics, syntactic and context cues.'

The above approaches to teach reading involve guessing and memorising 'authentic' or 'real' texts. They involve 'embedded phonics' or 'analytic phonics'. E.g., If reading the book 'Pig the Pug', the teacher points out that 'pig' and 'pug' start with P.

This ad hoc approach of appearing to teach phonics, is inefficient and is not aligned to the NITL 2005 recommendations or any scientific evidence.

### **HUMAN MEMORY**

The human brain has limits as to how many items it can memorise, in varying degrees.

The phenomena called 'The Year 4 Slump' is when children who have been 'reading' and 'spelling' by memory without phonics, begin to stall then fail to progress, clearly seen when comparing NAPLAN Year 3 Reading and Year 5 Reading.

Guessing and memorizing whole words does not teach reading or spelling.

### **THE LADDER OF READING (Nancy Young)**

5% learn to read effortlessly, working out the letter-sound code themselves.

35% learn to read with broad instruction, working out the letter-sound code themselves.

40% to 50% learn to read only by systematic, sequential, direct phonics instruction, then linked with vocabulary.

10% dyslexia can still be taught to read but only with systematic, diagnostic instruction.

### **EVIDENCE FOR THE MOST EFFECTIVE TEACHING STRATEGY FOR READING**

Over several decades, and especially in the last 10 years, thousands of scientific evidence-based studies about how children learn to read and the most effective teaching approaches for reading have been published in scientific and academic journals.

\*Ending the Reading Wars by Professor Castles, Professor Nation, Professor Rastle.

### **THE SIMPLE VIEW OF READING (Gough & Tunmer)**

The Simple View of Reading SVR (Gough & Tunmer 1986) is that learning to read requires two abilities:

1. correctly identifying words (decoding) and then,
2. understanding their meaning (comprehension).

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### THE FIVE ESSENTIAL ELEMENTS OF LITERACY

Oral Language is a pre-requisite skill for reading.

The correct order of cognitive processing is 1) Phonemic Awareness, 2) Phonics, then 3) Vocabulary, then 4) Fluency and then 5) Comprehension.

The cognitive processing order is important because it dictates best teaching practice.

#### PHONEMIC AWARENESS AND PHONICS \* See Appendix 1 F-2 Evidence Based Literacy Skills

Every word in the English Language can be sounded out.

As we speak, we sound out words, all words.

ph+o+n+i+c+s = phonics. ch+a+l+l+e+n+g+e = challenge. pt+e+r+o+s+aur = pterosaur

Phonemic Awareness is being able to listen to the 44 sounds in words, which allows use of Phonics or the Letter to Sound/Sound to Letter Code.

Systematic Synthetic Phonics (SSP) is learning to systematically decode letters to sounds in words, beginning with the simplest unit, allowing new learners to apply their letter to sound knowledge to sound out or say words they have not yet 'orthographically mapped' or 'learned.'

Competent readers have 'orthographically mapped' or 'learned' many words, so when they see them, they automatically recall, then link with vocabulary, in a split second.

E.g., "The zygomaticus will become the most important feature in this series."

If we come to a word, 'zygomaticus' that we have not seen before, we resort to using our phonic knowledge to decode that word or 'lift it from the page', then we link it with our known vocabulary or refer to a dictionary to gain its meaning.

Semantics will not help us to read that word.

Prediction will not help us to read that word.

Syntax will not help us to read that word.

Using Phonic knowledge is the only strategy that will enable us to decode or 'lift a word off the page', and then we can link it with meaning from our vocabulary or use a dictionary, to 'read' it.

Context, semantics, syntax, are important parts of English but, the point we are discussing here is, **how best to teach new learners to learn to read and spell.**

**EVERY WORD IS AN UNKNOWN WORD TO A NEW LEARNER**

Teaching strategies to 'guess unknown words from text' makes no sense to a new learner **because they have not learned any words yet.**

They cannot use semantic, syntactic, or predictive cues to guess unknown words, when they are in the **'Learning to Read' phase of Reading.**

This is the absolute crux of the 'Teaching of Reading' issue.

**This is exactly where the problem of Australia's illiteracy lies, but also its solution.**

**READING PRACTICE TEXTS for the 'LEARNING TO READ' STAGE.**

Whilst in the 'Learning to Read' phase, children need to practise reading text that they have been taught to decode, i.e., 'decodable' books, like trainer wheels on a bike.

When they are in the 'Learning to Read' phase, they should not be expected to practice reading words they have not yet learned. It only creates guessing, anxiety, and failure.

When children become independent readers, they are not asked to read 'decodable' texts, because they no longer need them.

'Authentic' or 'real' or 'predicable' texts should be **read to children as Children's Literature,** whilst they are in the 'Learning to Read' phase, after which they have learned sufficient reading skills to be able to read books themselves in the 'Reading to Learn' phase.

**DECODING WORDS USING Systematic Synthetic PHONICS**

Decoding skills are to learn to see letter(s) in a word, then translate that letter or letters into a sound or sounds, then blend the sounds together (SYNTHESIZE) to be able to say unknown words that have never seen in print before.

The Science of Reading shows best practice is to teach from the simplest unit, (c+a+t=cat) to decode unknown words, which leads new learners to be able to access thousands of unknown words.

Decoding is the gateway to literacy capability.

### 5 MINUTE PHONICS CHECK MID YEAR 1

In England, to ensure Year 1 children are progressing with learning to decode words, all schools use a 5-minute check in mid-year after they have had sufficient time to settle and learn.

Any child not making early progress is then given extra teaching **before they begin to fail.**

The goal is by the end of Year 2, all children will be ready for the 'Reading to Learn' stage.

In 2012, 58% of children passed. In 2016 80% of children passed, with some schools reaching 100% pass.

In 2016, the English PIRLS results showed the average score for English Students in Reading was the highest it has been since 2001.

All Students improved and the lowest performers improved the most.

England is now back in the top 10 group of nations in Reading.

Trials show teachers are satisfied with giving the test and children enjoyed their time with their class teacher.

It is difficult to understand why there is any resistance to this rational and effective check.

### SUGGESTED SOLUTIONS

- 1) The current National English Curriculum is a Whole Language document, with minor mention of phonics and scant teaching detail. When the National English Curriculum was developed, whole language/balanced literacy dominated but that situation is now well over due to the significant amount of scientific evidence published since. All English Curricula now needs to reflect the evidence-based knowledge for best practice.
- 2) **Separate the Primary English Curriculum 'Learning to Read' stage for Years F-2 from the 'Reading to Learn' stage from Years 3 -6, which NSW NESA has done.**
- 3) **Prioritize the teaching and cognitive processing order** of the Five Essential Elements of Reading: Phonemic Awareness, Systematic Synthetic Phonics, Vocabulary, Fluency, Comprehension and include Grammar, Punctuation, Handwriting, with Reading and Writing practice.
- 4) **Inquiry does not belong** in the F-2 English and Mathematics Curriculum. Inquiry, critical thinking, and problem solving are all appropriate only **AFTER CONCEPTS AND SKILLS ARE LEARNED TO MASTERY**, never before, as with learning any skills that requires accuracy.



- 5) **Set one hour every day** for the Direct Teaching of Literacy Skills and **one hour every day** for the Direct Teaching of Mathematics Skills, allowing 2 hours a day for Core Learning of Literacy and Numeracy Skills out of a 6 ½ hour school day. Incidental teaching occurs during the day. Children always have access to class library books.
- 6) **Declutter** the wide range of subjects of important but non-essential topics that are overloading, and overwhelming Primary schools, teachers, and young children. Some subjects are not relevant until after Year 2 or after Year 6.
- **Raising Education Standards should relate to teachers using improved teaching methods for improved results.**

**Raising Education Standards does not relate to raising standard levels unrealistically high for young children and their teachers, which only some children can reach but creates stress, anxiety and failure for both children and teachers.**

In the English Curriculum, place all references to the Five Essential Elements of Literacy, Phonemic Awareness, SSP Phonics, Vocabulary, Fluency and Comprehension in the Literacy Strand, so Primary Teachers can follow the curriculum more clearly.

- 7). In all Strands, state the **correct cognitive developmental order** of 'learning Literacy'.
  - a. Listening b. Speaking c. Reading d. Viewing e. Writing f. Creating.

Current order of 'listening, reading, viewing, speaking, writing, creating texts' is incorrect.

#### 8) **OMIT SIGHT WORDS – See 'Orthographic Mapping'.**

New learners should not have to struggle to 'memorise' whole Sight Words in the F-2 'Learning to Read' phase. It creates guessing, practicing errors, stress, anxiety and failure.

Instead, display 'Frequently Used Words' in classrooms, which new learners can copy from, until they learn them in SSP Phonics.

Words like 'his, her, here, he, had' all look the same to a new learner.

#### 9) **Revise all F-2 Achievement Standards.** (See Appendix 1 and 2)

**The expectations for young new learners are set far too high.**

Most children will not be able to reach them, leading to avoidable 'instructional casualties' and unnecessary feelings of failure. See Ladder of Reading. Again, raising educational standards should translate to best teaching practices producing best learning, NOT to raising bars so high they are unattainable for many young children in the 'Learning to Read' stage of schooling.

This only results in undue pressure on both children and teachers feeling that they are 'failing'.

- In FOUNDATION expect children to only learn to decode and spell (encode) CVC short vowel words with 1 syllable words.
- In YEAR 1 learn 1 syllable CVCC/CCVC then CCCVC words, consonant digraphs.
- In YEAR 2 learn 1 syllable words with long vowel digraphs to avoid children confusing long and short vowels when taught together.
- Do not ask young F-2 children for 'persuasive' or 'informative' texts, only use words they know like 'stories', and 'information'.
- Do not expect F-2 children to 'learn proper nouns, verbs, phrases, clause, adverbs, adjectives, or precise verbs, syntax, semantics, compound sentences, personal or possessive pronouns or conjunctions, morphemes, graphemes, prefixes or suffixes, etc which are skills that are suited to be taught sequentially from Years 7-12.
- NO SILENT READING
- F-2 children should never be asked or expected to EDIT text, an impossible task when THEY DO NOT KNOW ANY WORDS YET. Young children are not mini – adults.
- In F-2 Mathematics, do not expect children to use mathematical concepts or operations before they have been TAUGHT the foundational Mathematics Skills individually and have been given enough time to learn and master them; 2-3 years.
- Do not expect young children to use numbers above 10 until they have FULLY learned the properties of all numbers 1-10, etc.

Eg. If the child is given 10 objects, can they use them to demonstrate these operations?

$3+3=9$  (add)  $3-3=0$  (Take Away)  $3 \times 3=9$  (groups of)  $3 \div 3=1$  (how many groups of)

- DO NOT USE CALCULATORS UNTIL YEAR 6.

Children may show that  $13+9=19$  or  $4 \times 3 = 12$ , or  $18-7=11$  or  $15 \div 5=3$  by calculator but can they demonstrate with objects or sticks that they understand the operation?

If they are allowed to use calculators to compute, they probably will not learn to understand the operation. This leads to children not understanding mathematics later.

### **Always only teach from what children know.**

#### **FAQ.**

Does Direct Teaching stunt children's creativity?

No, creativity comes only after skills are mastered.

Children are different so teachers need to teach them in different ways.

Children are different but Cognitive Psychologists know the cognitive learning process for reading is the same for all children.

Children have different Learning Styles.

There is no evidence that children have different learning styles.

Children will get bored by systematic, sequential teaching.

Children only get bored if they have to keep practising a task they have already mastered. Children are not bored while they are in the process of learning a new skill.

We can't hold 'the bright children' back.

Young new learners' rate of academic progress is variable, that the Core English and Mathematics Curriculum must allow for, as a normal and acceptable occurrence.

Teachers create groups, with tasks for varying ability levels in Direct Teaching of Literacy Skills and Direct Teaching of Mathematics Skills, allowing for children who have mastered one level of skills to move on, whilst providing revision for other children who need.

**READING IS THE FOUNDATION STONE FOR EDUCATION**

**Without Reading, there is No Education.**

**The highest priority of Primary Education**

**is to Teach the next generation how to Read and Write the Written Language.**

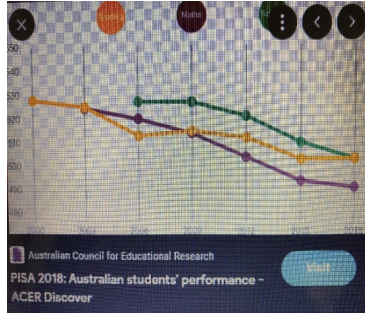
**PRIMARY SCHOOLS HAVE 7 YEARS TO TEACH CHILDREN TO READ, SPELL, WRITE AND CALCULATE TO A FUNCTIONAL SKILLS LEVEL OF LITERACY AND NUMERACY.**

Jo Rogers July 2021

APPENDIX 1 F-2 Evidence-based English Skills Curriculum

APPENDIX 2 F-2 Evidence-based Mathematics Skills Curriculum

Incidental teaching occurs throughout the day.



### APPENDIX 1

#### 'LEARNING TO READ' – FOUNDATION, YEAR 1, YEAR 2.

#### DIRECT TEACHING F-2 FOUNDATIONAL LITERACY SKILLS – ONE HOUR DAILY

PHONEMIC AWARENESS

SYSTEMATIC SYNTHETIC PHONICS, VOCABULARY,

FLUENCY, COMPREHENSION,

HANDWRITING, READING, WRITING PRACTICE.

The current English F-2 Curriculum contains non-evidence-based information and mention of Phonics is not systematic or sequential and lacks teaching detail.

The following F-2 Core Literacy Skills Curriculum was –

- Always in the Australian Primary school curriculum Prep - 2 before 1980,
- followed by special education teachers since 1980, as 'it always worked',
- found by NITL 2005 and all scientific research in the last 10 years, to be the evidence -based best practice for teaching all children to read and write.

#### The alphabet and sounds in words and the dictionary do not change over time.

If this Teaching of Literacy Skills Curriculum is in F-2 English Curriculum for Foundation, Years 1 and 2 from 2022, **every teacher will know** how to teach every child, and **every child can learn** the foundational Literacy Skills they need to master, so they can engage with the Year 3 English Curriculum and beyond.

If implemented from 2022, the results will be seen by Year 4 PIRLS 2026, if not before.

- Incidental teaching also occurs throughout the day.
- Children's literature is read to children frequently.
- Class library books are always available to all children.
- Phonics is always taught with vocabulary, never on its own.
- All children are different but cognitive psychologists know that **all children learn using the same cognitive process.**

**CONSIDERATIONS:****i) Individual Differences**

- Some children begin Foundation Year with some or many literacy skills, whilst other children have few skills or none.
- Individual differences vary from school to school, within each school and within each class.
- Children's rate of learning progress is variable.

F-2 teachers plan a daily foundational Literacy Skills 60-minute session with

1. whole class teaching of revision then teaching of new skills followed by
2. practice tasks for at least three ability groups, to cater for individual differences. Streaming if required.

**ii) Use of Effective Terminology**

- Always teach from what the children know.

Teacher to Teacher vocabulary uses words such as alphabet, phonemic awareness, phonics, phonemes, graphemes, morphemes, digraphs, split digraphs, trigraphs, quad graphs, proper nouns, common nouns, verbs, adjectives, phrases, clauses, syntax, semantics, prefixes, suffixes.

BUT

Teacher to Child vocabulary **only uses words young children know and understand**, like 'sounds', 'letters', 'words', 'we use the letters to make the sounds in words', 'two letters make one sound' (digraphs), 'three letters make one sound' (trigraphs), 'four letters make one sound' (quad graphs), naming words, doing words, describing words, sentences, stories.

**iii) F-2 English Curriculum Content**

- The F-2 English Curriculum need not be too full or too complex, as it is now, for effective teaching of literacy skills to all young new learners.

**iv) F-2 Achievement Levels**

- F-2 Achievement Standards should not be set too high or expected to be reached too soon, as they are now.
- Young children need a much more realistic time frame to 1) remember, 2) practice and 3) learn new information, so they can learn all the foundational Literacy Skills thoroughly to mastery.
- Some children (5%) may complete learning all foundational Literacy Skills during Foundation or during Year 1. Their learning can be extended laterally

by reading higher level books, writing stories and information texts and many other literacy activities.

- Most children will learn these skills by the end of Year 2, so they are ready to engage with the 'Reading to Learn' stage of schooling from Year 3.
- Some children (20% Tier 2) need more time to practice and revise new information in order to fully learn and master it.

They may still be in the 'Learning to Read' stage during Year 3, and a few children still during Year 4 (5% Tier 3).

Schools allow and plan for them as normal and expected occurrence.

As current F-2 Achievement Standards at each year level are unrealistic for children and their teachers to reach in the given time frame, replace with individual year level Achievement Standards with,

### **F-2 "Learning to Read"-Achievement Level Continuum Checklist**

which has no time limit.

- Implementation of this strategy will ensure all primary children can learn the foundational Literacy Skills, before the 'Read to Learn' stage of schooling.

If children do not master all the foundational Literacy Skills, they cannot learn higher level skills, so they fail by Year 3 and fall further behind every year after.

- The Mid - Year 1 Phonics Check used in every primary school is a quick, effective, and valid way to find children before they begin to fail, thus avoiding illiteracy and the psychological damage to their mental health.

If criticism is, "This test is not needed because teachers know which children are struggling" it can be answered, "If that is true, there would be no illiteracy statistics. "

- Teaching and learning foundational Literacy Skills is not creative. It is precise, systematic, and sequential in learning from simplest to complex, step by step, **as with learning any new skill that requires accuracy.**

Inaccurate reading of words is not creative if children cannot understand text.

Illegible handwriting is not creative, if children's writing cannot be read.  
Incorrect spelling of words is not creative when writing cannot be read.

There is ample time in the rest of the school day for creative activity.

## TEACHING BEGINNING FOUNDATION CORE LITERACY SKILLS

One hour daily - 1<sup>st</sup> session in the morning or just after morning recess when children are fresh.

Teach these initial skills concurrently.

### 1. Recognition of Alphabet Letters by Name, A-Z

As children first learn to sing letter names in alphabetical order, it makes sense to them to continue teaching Initial Literacy Skills in alphabetical order. Teach from what the children know.

Classroom display of linear Alphabet 'Aa with picture, Bb with picture,' etc and a laminated Alphabet Strip 'Aa Bb' on each table for F. Years 1 and 2, with dot and arrow showing starting point and direction of writing.

Teacher models by pointing to each letter and 1) sing, and 2) say the letter names. Children point to each letter whilst they sing and say the letter names.

Application - Children's names. Teacher writes name, and fluro the first letter. "Sophie's name starts with the letter S". "Ben's name starts with the letter B." "Georgie's name starts with the letter G" etc. Focus is on the letter names.

### 2. Phonemic Awareness - Listening to the Initial Sounds in Words A-Z

Oral to begin because children come with oral language, then teach PA with both oral and letters, focus on sounds. "What sound does a fire engine makes?" "What sound does a cat make?" Etc.

Teach the Letter - Sound Concept, "The name of the animal is 'cow'. The sound it makes is "moo". Etc.

"What sound can we hear at the beginning of the word, cow?" Etc.

Use many examples of children's names, animals, household objects, etc.

### 3. Link Letters and Sounds, Phonics A-Z

Class book, one alphabet letter (Aa) per double page, 1 Letter-Sound per session.

Picture of an apple on the 'Aa' page. Teacher writes the word 'apple', fluro or colour the first letter. Say, "apple starts with the letter 'a'. "The sound we hear at the beginning of apple is 'a'." and "apple starts with the 'a' sound."

A picture of an alpaca. Teacher writes the word 'alpaca', fluro or colour the letter 'a'. Say "The sound we hear at the beginning of alpaca is 'a'. "Alpaca starts with the 'a' sound." "Alpaca starts with the letter 'a'. etc.

If a child offers a picture of an acorn, say "acorn starts with the sound 'ay'. We will learn that sound later."

With 'g' as in garden, if a child offers a picture of a giraffe, say "giraffe starts with the 'j' sound. We will learn those words later." Keep initial teaching simple.

If a child offers a picture of a ship, say, "Yes the beginning sound of ship is 'sh'. We will learn those sounds later." Keep initial teaching Simple.

Read this book with the children often, beginning with Aa page each time, adding more pictures and more Letter-Sounds, but one Letter -Sound at a time.

Then children can make their own books and 'read' them, pointing to the pictures and words. Other activities also teach children to link Alphabet Letters – Sounds.

#### 4. Do Not Rush.

Do not rush this learning process. Allow for individual differences. Some children may learn this skill after one lesson; others may take one term or longer. This is not linked to intelligence, rather more to learning differences.

Foundational Literacy Skills are very important for each child to fully learn to mastery.

Teach at a pace that suits the learning needs of the class and individuals within the class. Let the children's rate of learning set the pace, not the timetable.

Some classes may learn one new Letter – Sound per day.

Other classes may only learn 1 or 2 Letter-Sounds per week.

Some classes may learn a few Letter – Sounds, then stop to revise, before learning several more Letter - Sounds, then stop to revise again. Etc ]

Some children will know all Letter – Sound knowledge after one term, some after two terms, or longer. Groups may be needed.

Commented [JR1]:

#### 5. Initial Foundation Handwriting: 10 min Daily

Give each child a large, soft pencil grip on a thick pencil.

Teach the correct pencil grip daily, holding pencil between thumb & pointer finger, resting pencil on middle finger, important to avoid handwriting tension later.

1. Tracing, copying, drawing straight horizontal, vertical lines.
2. Tracing, copying, drawing curved lines, lines with hooks.
3. Tracing, copying, drawing circles beginning at 1 o'clock, anti-clockwise.
4. Tracing, copying, drawing squares, triangles, rectangles.

#### 6. Writing the Alphabet Letters, A-Z - Only one letter per session.

When children can sing and say the alphabet, using all the correct letters names whilst pointing to each letter, they are ready to begin learning to write each letter, using the correct letter formation, so their cursive writing is legible later.

Research shows handwriting aids 'orthographic mapping' or learning of letters and words better than keyboard.

On 50 mm spaced lines, wider if required by individual children. Show correct starting point with arrow to show direction.

Teach the correct letter formation of Upper- and Lower-case letter initially, as children need to read and write capital letters in names and to begin sentences.



After Upper case letters have been learned, the focus moves to writing lower case letters, because they appear in written text more frequently.

### 7. Alphabet Strips on Tables

Leave alphabet strips on all tables during Foundation, Year 1, and Year 2, to ensure all children 'orthographically map' or learn the image of each letter, and alphabetical order to automatic recall.

Some children will need to refer to them for that whole time, while others may need to use them for confirmation.

To avoid some children 'feeling different', strips stay on every table for F-2. Colour letters 'b' and 'd' in different colours to avoid confusion.

### 8. F-2 Correct Letter Formation – Lower Case Letter Families (mnemonics)

Once children have learned to write upper- and lower-case letters in alphabetical order, it is helpful to continue to practice handwriting lower-case letters using correct letter formation of 'families in houses.' (Mnemonics)

E.g., The Little 'C' family', The tall stick family', The short stick family etc. Teach only one group in each daily session.

1. The Little 'C' Family all start with a little 'c'.

c.a.d.g.o.q.

2. The Tall Stick Family all start with a tall stick, going down. (Teach direction)

b.h.k.l.t

3. The Short Stick family all start with a short stick going down. (Teach direction)

i.m.n.r.u.v.w.x.

4. Letters that have a tail that goes under the line.

g.j.p.q.y.

5. Letters that are singles

e.f.s.z

If children are struggling with handwriting, draw the shape, line, letter, or word in light pencil, so they trace over, and/or copy from large text on card.

## 9. Lined Paper

### FOUNDATION

Writing on 60cm to 50 cm depending on the individual development of each child.

### YEAR 1.

Writing on 30 mm to 40 mm spaced lines, depending on need.

### Year 2.

Writing on 20 mm to 30 mm spaced lines, depending on need.

If children are struggling, give them thicker pencils and wider spaced lined paper.

## 10. F-2 Handwriting practice of CVC Words – 10 min daily

When children can –

- write all Aa to Zz letters, and
- know all common sounds made by alphabet letters,

they can begin to learn VC (Vowel Consonant) and CVC words, and write them in the handwriting practice sessions, with writing patterns.

To begin each lesson, always revise the previous learning first.

Teacher models on whiteboard first whilst verbalising the steps, so that children always know what is expected of them before they begin the task.

E.g., Writing the word 'b+a+g=bag.

Teacher sounds out b+a+g=bag, writes b a g and says" the letter 'b' starts with a tall stick going down then the backpack goes on the back,

the letter 'a' starts with a little 'c', and

the 'g' starts with a little 'c' with the tail going under the line. b + a = g = bag.

Verbalising instructions about letter formation helps young new learners to write the letters.

## 11. F-2 Reading Practice - Daily

Teachers need to choose the reading books best suited to each child to systematically practice text that has been taught and learned in class, i.e. 'Easily decodable' books. Children choose their own library books but **not the reading practice book. Teachers should listen to every child read regularly.**

Children can point to words as long as they want.

No silent reading during this "Learning to Read" stage.

All parents should be expected to do is 1) to hear their children read one practice reading book at home and then 2) read stories to their children, daily.

All other teaching and learning should be done by teachers at school.

**Do not give reading practice books containing words children do not yet know.**

This only leads to children guessing unknown words, practising errors and anxiety, at a time when foundational orthographic mapping of words is taking place.

**Do all children need to practice 'decodable' books? No.**

Children only need to read decodable books whilst they are 'learning to read'. Children's literature is read to children daily. All children have access to class library books at all times.

### **12. F-2 Writing Text - Daily**

Children have many opportunities to speak, write and draw their ideas and knowledge.

Ask children to write stories and information, words they know and understand.

Do not ask F-2 young, new learners to write 'informative', 'persuasive' and 'imaginative' texts, which are inappropriate words to use for young children.

Always teach from what children know. Only use words children know.

### **13. Writing text is the most complex Literacy Skill involving,**

1. oral language and
2. handwriting the letters and
3. spelling and
4. punctuation and
5. remembering a space between words, in one simultaneous action.

Children have to develop sufficient executive functioning skills before they can exercise the writing task successfully and fluently, at one time.

New learners genuinely tire easily when writing.

Avoid unrealistic expectations.

In Foundation, only ask children to write one sentence. They can write more if they choose.

In Year 1, only ask children to write one page, and accept less. Children can write more if they wish. Children will automatically write more as their skills develop. We want children to enjoy not dread writing.

In Foundation, children tell their sentence to the teacher, who writes it in large clear text in pencil, so they can trace over.

Educate parents to follow this strategy and not spell unknown words out by letters.

If children want to know how to spell a word, they tell the teacher or adult the word, who writes it in large clear text on paper, from which the child copies.

If a child spontaneously 'has a go' at writing a word, let them.

But teachers should not ask or expect F-2 children to 'have a go' at spelling unknown words, as it only encourages guessing and practising errors.

If correcting errors, write the correction in soft grey lead pencil, never red or coloured pencil or pen as it gives new young learners negative feedback.

#### **14. F-2 Children Cannot Edit Text**

Until a child has 'orthographically mapped' or learned a word into their permanent memory, **they cannot possibly 'edit' any text, because they have no way of knowing yet if that word is correct or not.**

They also cannot recognise the correct spelling of a word either. E.g. Which word is spelt correctly? seflh, shelf, shlfe, sehfl. A new learner would not know.

**All references to 'self-editing' or 'editing' text must be omitted in the F-2 Curriculum.**

Reconsider if editing should be expected before Year 5.

#### **15. Grammar**

Grammar is a very complex skill for young new learners, who are also learning many other Literacy Skills at the same time.

The current English Curriculum Grammar component is unrealistic for primary school year levels and needs revision.

Realistic F-2 Grammar Skills are –

**Foundation** Naming Words. Terms 1, 2 3, 4.

**Year 1.** Naming Words Term 1,2 Revise Naming Words and teach Doing Words Terms 3. 4.

**Year 2, Year 3.** Revise Naming Words and Doing Words and teach Describing Words.

**Year 4, Year 5, Year 6.**

"We call naming words, nouns. We call doing words, verbs. We call describing words, adjectives."

Then every child will master the foundational grammar knowledge on which to build.

**All Other Grammar is only appropriate to teach sequentially from YEAR 7 to YEAR 12.**

Adverbs, phrases, clauses, precise verbs, syntax, semantics, compound sentences, morphemes, possessive pronouns, prefixes, conjunctions, suffixes. Etc.

### **16. Punctuation - Foundation, Year 1. Year 2.**

Teacher models, "When we begin a sentence, we start with a capital letter."

"When we write a sentence, we put a two-finger space between the words."

"When we end a sentence, we stop the words with a full stop."

This complex skill will take three years for most F-2 children to master.

When children read text with ? and ! and "x " punctuations, incidental teaching of –

"We use talking marks at the beginning and at the end of the words that are spoken."

"When we ask a question, we use a question mark at the end of the question."

"When we write strong or loud words, we put an exclamation mark at the end of the sentence."

#### **Do not ask or expect F-2 children to use this punctuation yet.**

Just keep mentioning it.

Some children will begin to use this punctuation in their writing spontaneously, as their skills develop.

### **TEACHING PHONEMIC AWARENESS, PHONICS and VOCABULARY – WORD STUDY**

#### **17. Background**

- Until the 1980's, English F-2 Curriculum always contained systematic, sequential Phonics Word Lists as a guide for teachers to teach F-2 Phonics.

**Scientific research in the past 10 years has produced much evidence that proves beyond any doubt, that the recommendations of the NITL 2005 are by far, the best practice for teaching literacy skills to all children.**

#### **NITL 2005**

"The evidence is clear that direct, systematic phonics instruction is essential for children to master the essential alphabet code-breaking skills required for foundational reading proficiency."

"Where there is unsystematic or no phonics instruction, children's literacy progress is significantly impeded, inhibiting their initial and subsequent progress on reading accuracy, fluency, writing, spelling, and comprehension."

"Phonics during the early years of schooling is an essential foundation for teaching children to read."

"Systematic phonics is critical if children are to be taught to read well, whether or not they experience reading difficulties."

**Dr Ken Rowe, National Inquiry in Teaching of Literacy. NITL 2005 (ACER)**

Growing numbers of primary schools and teachers are now following the NITL recommendations because they want to use best the teaching practice for their students.

A plethora of commercial phonics resources with word lists of varying methodologies and efficacies have developed, leading to confusion for primary teachers who do not know which programs are evidence-based and which are not.

**At worst is the negative impact on new young learners.**

Five-year-old children may have one teacher using one commercial phonics program in Foundation, then,

the Year 1 teacher may not teach any phonics,

and then those children's Year 2 teacher may use a different phonics program than the first, with a different methodology and presentation.

This situation is not conducive for the best teaching, learning and welfare for young children. It is unfair to young new learners and their teachers, who want to do their best.

**Inclusion of the systematic and sequential phonic word lists will resolve this issue, allowing schools to continue using any current evidence based commercial programs but streamlining the teaching of SSP phonics for all Australian schools, ensuring no children falls through any gaps in the teaching SSP Phonics.**

**18. Rationale for F-2 English Curriculum containing F-2 PHONIC WORD LISTS**

The Word Phonic Lists in this appendix follow alphabetic order and align with the evidence-based Phonics programs used in schools and align with the NITL recommendations.

**SYSTEMATIC, SYNTHETIC PHONICS in the 'LEARNING TO READ' stage**

The Simple View of Reading (Gough & Tunmer)

1. decode word,
2. link word to meaning.

### 19. Synthetic Phonics

is when the pronunciation of an unknown word is discovered through sounding out letter(s) into sounds, then blending or synthesizing sounds into words, from the simplest unit.

### 20. Orthographic Mapping (OM) (Professor Linnea Ehri, 1998)

#### Cognitive processing to learn new words involves Orthographic Mapping.

Leading Cognitive Psychologists tell us -

Orthographic mapping is the mental process we use to permanently store words for immediate, effortless retrieval.

Orthographic Mapping is the cognitive process we use to take an unfamiliar printed word and turn it into an immediately recognizable word.

It is the cognitive process we use to connect the sounds in words to the letters in words, to decode them, then connect with known vocabulary, then when practised enough (all for individual differences) stored in memory to become instantly recognizable words we can read and spell and understand. I.e sight words.

Orthographic mapping of words requires phonemic awareness and letter to sound phonics skills.

Orthographic mapping of words using phonics, results in learned words eventually becoming sight words when they have become learned to automaticity.

Children who learn orthographic mapping best, will become the better readers and the better spellers.

Orthographic mapping facilitates vocabulary development.

#### **Sight Words-**

Orthographic mapping is not the same as learning sight words, where words are memorized as whole word shapes without reference to the grapheme to phoneme properties of the word.

At present the F-2 English Curriculum includes memorising of sight words or Frequently Used Words as sight words for learning reading and spelling and is not best practice.

Memorising words by whole shape is too difficult for many new learners and leads to guessing, practising and learning errors, and anxiety.

Learning Sight Words is contra-indicated for the F-2 English Curriculum. Omit.

Instead write Frequently Used Words in large text on class charts (with picture clues) so F-2 children can copy them as they need.

They will learn those words by Phonics Teaching when they will be orthographically mapped.

### **21. Orthographic Mapping of Words requires Accuracy.**

Best teaching practice is to use strategies that enable new young learners to orthographically map or **learn words accurately in the first instance.**

Guessing leads to learning errors and once errors are learned they are difficult to un-learn.

### **Foundation Phonemic Awareness and Phonics.**

When children have learned -

- 1) recognition of all alphabet letters,
- 2) handwriting of all alphabet letters,
- 3) and one common sound each letter makes at the beginning of a word,

they are ready to begin learning to read, spell and write words using Phonics.

### **22. Use of Sound Wall or Sound Chart – 44 squares**

Some teachers use a SOUND WALL or SOUND CHART with 44 SQUARES for each SOUND.

**Initially sound squares will be empty and built up slowly with the children during F-2.**

Some teachers use two charts, one for consonants and one for vowels.

**As each 'Letter -Sound' is sequentially taught, a new Sound Square is filled in.**

The chart is built up gradually, one Sound Square with only one example of letter/sound at a time, to avoid learning confusion.

New learners should not be expected to interpret a completed full Sound chart as per commercial programs when they are in the beginning stage of 'Learning to Read'.

The pace of teaching and learning may vary from school to school, class to class, and within a class, because of the individual differences of children.

The teacher decides the pace, depending on the needs of his/her students.

Teachers may decide their class needs to learn, practice, and revise each Phonic Word Group for one week, or two weeks or longer, to begin.



Other teachers may find their class learns each Phonic Word Group quickly or that some children learn quickly so they can move on, whilst other children need more time for revision.

Two or more groups may be needed to learn Phonic Word Groups.

There is no rush in teaching foundational Literacy Skills to young new learners. Slow, steady, and patient teaching is required.

### **BEGINNING TO TEACH VOWEL CONSONANT (VC) WORDS.**

To begin, one word each session.

1. For many children, each word is an unknown word. Teacher shows two cards 'a' and 'm' separately.
2. Teacher models -  
"This letter 'a' says a and this letter 'm' says m.  
We put them together, and they say the word, 'am'. Show.
3. Use In an oral sentence, "I am going for a walk."
4. "This is how we write the word 'am'. Teacher writes the letters a and m
5. "This says a+m=am, and in an oral sentence, "I am going for a walk."

The next day, revise the previous session(s), model then teach.

Revise a+m=am, "I am five years old." Use in oral sentences.

Teach a+n=an, "I ate an apple."

a+s=as,

a+t=at,

i+n=in, i+s=is, i+t=it,

o+f=of, o+n=on,

u+p=up

If using a Sound Wall or Chart, ADD each new letter-sound as it is learned.

### **TEACHING CONSONANT-SHORT VOWEL-CONSONANT (CVC) WORDS**

Teach only one UNIT in one session.

Teach one UNIT per week, or longer if children need.

Only move on to learn the next UNIT when each child has learned each word.

There is no point in children learning the next UNIT words when they haven't learned the previous UNIT words. This only leads to confusion.

Those children will keep being left behind, not thoroughly learning any foundational skills, on the path to literacy failure.

The learning of foundational Literacy Skills for each child, takes as long as it takes.

Use groups or stream to cater for individual differences.

Teach

c+a+t=cat.

Say, "What letter is this?" 'c' Show on card or write on white board.

Say, "It makes 'c' sound."

"What letter is this?" 'a' Show on card or write on white board.

Say, "It makes 'a' sound."

"What letter is this?" 't' Show on card or write on white board.

Say, "It makes 't' sound".

Teacher models, "Say the sounds together to say the word, c+a+t=cat,

Use orally in a sentence. "My cat is white." Children's oral sentences.

ETC

When children have mastered Phonemic Awareness skills listening to initial sounds in words, they can now expand to listening to sounds at the middle and ends of CVC words.

Short vowels are very difficult to discriminate between to new learners. Teachers can highlight short vowels accentuating the sound and writing vowels in different colours.

### **23. What about Onset – Rime?**

Cognitive Psychologists now know (MRI) that even competent adult readers see individual letters in words when they read, not as blends or chunks, in a split second.

Best practice now known by scientific evidence is to teach each letter,

Instead of fr + og, best practice is now f+r+o+g=frog.

Children can put letters on cards, use plastic letters or write letters, then put them together to synthesize or blend sounds into words.

Then words meaning is discussed, then the word is used in sentences.

Until a word is 'orthographically mapped' correctly to automaticity, let the children see the word, to avoid practising and learning errors, unless in a QUIZ or TEST.

- Do not use the 'Look Say Cover Write Check' strategy.

Take out the word 'cover' because it results in some children guessing and practising errors.

- Do not mix groups e.g., m+a+t=mat, h+a+m=ham, g+a+s=gas,) until children have orthographically mapped or learned the words in each group separately.

Then only mix two groups, m+a+t=mat, and m+a+p=map, Quiz /Test

When two groups are learned, then add three groups together, Quiz/Test etc.

If children are confusing the words, stop, go back to teaching the word groups separately.

They just need to be given more time to learn. Children with weak auditory and/or visual short-term memory may need many more practices before they learn a word to long term memory. Use picture clues.

#### THE SIMPLE VIEW OF READING

1. Letter to sound, letter to sound, letter to sound. (decode)
2. Blend or synthesize sounds together to read unknown words, (Decode)
3. Then link with meaning (vocabulary),
4. Then use in oral sentence. (vocabulary).

#### **24. Word Building** - Incidental Teaching at this Initial stage.

When learning to read and write CVC words, e.g., 'pat', some children may offer words like 'patting'.

The teacher says, "patting is a longer word, claps out 2 syllables, then says "the word 'pat' has 'ing' on the end, making it say 'patting',

"I am patting the cat".

We will learn longer words later".

#### **25. Teaching each Phonic Word Group Unit**

Allow one week or longer to teach one UNIT

Sound out each letter.

Synthesize or blend sounds together to say the word.

Discuss meaning. Use word in oral sentences.

Teacher writes the word.

Children write the word as the teacher sounds out the letters.

Children sound out the letters and say the word.

Children write on white boards, paper, and individual word books.

Do not use gimmicks like bubble, glitter, rainbow or backwards or diagonal writing as, it is the gimmick that is more likely to be remembered.

### Quiz or Test

There is no need for children to become anxious about testing, if it is treated sensibly by ALL adults around.

There should be No hype, No build up, No consequence, No fuss. No marks out of 10.

Teacher, "Can you write the words I say?" "Mat, I wipe my feet on a mat. Write the word, Mat." Etc

The Teacher gathers the papers or books, corrects them privately with no comment other than, "You all did very well."

Just give encouragement and praise. Avoid practising of errors. F-2 children are young children.

### FOUNDATION PHONIC WORD LISTS

#### 26. Say "These words all have the letter 'a' that says 'a' in the middle.

F-UNIT 1

b+a+t=bat, cat, fat, hat, mat, pat, rat, sat, vat. Meanings in oral sentences.

QUIZ/TEST

F-UNIT 2

d+a+m= dam, ham, jam, ram, Sam.

QUIZ/TEST

F-UNIT 3

b+a+d= bad, fad, had, lad, mad, pad, sad, (separate dad, to avoid b/d confusion.)

QUIZ/TEST

F-UNIT 4

b+a+g=bag, lag, nag, gag, rag, sag, tag, wag.

QUIZ/TEST

F-UNIT 5

b+a+n= ban, can, Dan, fan, man, Nan, pan, ran, tan, van. (We use a capital letter when we write the name of a person.)

QUIZ/TEST

F-UNIT 6

c+a+p=cap, gap, lap, map, nap, sap, tap.

QUIZ/TEST

Children who need more time to practice learning these words, revise.

It is most important that all children learn to decode and encode (spell) each word correctly, during this foundational stage of learning.

Some children just need more time and practice.

Groups may be needed. Children who have learned all of these words thoroughly, with final consonant mixed, ab,ad,ag,am,an,ap,as,at, can move on.

**27. These words all have the letter 'e' which says the 'e' sound in the middle.**

F-UNIT 7

b+e+t=bet, get, jet, let, met, net, pet, set, vet, wet.

QUIZ

F-UNIT 8

B+e+n = Ben, hen, Ken, men, pen, ten, den.

Teach, "When we use people's names, we use a capital letter."

QUIZ

F-UNIT 9

b+e+g= beg, keg, Meg, peg,

QUIZ

F- UNIT 10

b+e+d= bed, fed, led, red, wed.

QUIZ

The word 'said', say "It is written 's / ai/ d' with the letters a and i making the 'e' sound".

Write 'said' with picture clue on the class 'Frequently Used Words' list for children to copy.

If a child offers 'head', say "Yes, the letters 'e' and 'a' make an 'e' sound in the word 'head'. We will learn those words later".

F-UNIT 11

Always teach using vocabulary children know.

Teachers say,

"Sometimes two letters make one sound. (Digraph) In these words 'l + l = ll' makes the 'l' sound." Mark both letters with a fluoro pen to show the concept.

ADD 'll' to the 'l' sound square.

b+e+ll=bell, fell, hell, sell, tell, well.

y+e+s = yes

QUIZ

F-UNIT 12 "These words all have the letter 'x' in them that makes the sound 'x'.

a+xe = axe, ox, box, fox, fix, mix, (Divided opinion whether it is one sound or two.)

QUIZ

Children who need more time to learn these words separately, revise. Revise CVC words with middle 'a' also.

Learning or 'orthographically mapping' these words may take 1 or 2 or 3 terms. It will take as long as it takes. Patience is required.

As every first syllable has a vowel, it is critical that the vowel in the first syllable is known correctly, required to use 'spell check' and the dictionary.

There is no gain to rush this beginning stage.

Tier 2 teaching may be required as well as class teaching.

When children have orthographically mapped or fully learned all CVC words with middle 'a' and middle 'e' mixed, without confusion, they move on.

**28. "These words all have the 'i' letter and sound in the middle"**

F-UNIT 13

d+i+p= dip, hip, lip, nip, pip, rip, sip, tip.

QUIZ

F-UNIT 14

b+i+n=bin, fin, pin, sin, tin, win, din

QUIZ

F-UNIT 15

d+i+m= dim, him, rim, Tim.

Teach, "We use a capital letter when we write someone's name".

QUIZ

F-UNIT 16

b+i+g=big, fig, jig, pig fig, wig, dig

QUIZ

F-UNIT 17

b+i+d= bid, hid, kid, rid, teach 'did' last to reduce b/d confusion.

QUIZ

F-UNIT 18

b+i+l=bill, fill, hill, kill, mill, pill, sill, will Teach 'Sometimes 2 letters make one sound'.

QUIZ

Children who need more time to learn these words and CVC words with middle 'a', 'e', 'i' mixed, revise.

Children who have learned all of these words and CVC 'a', 'e', 'i' mixed, move on.

**29. These words all have the letter 'o' saying 'o' in the middle.**

F-UNIT 19

c+o+t= cot, dot, got, hot, jot, lot, not, pot, rot.

QUIZ

F-UNIT 20

G+o+d= God, nod, pod, rod,

"Words start with a capital letter if they are someone's name."

QUIZ

F- UNIT 21

h+o+p=hop, lop, mop, pop, top.

QUIZ

F-UNIT 22

b+o+g=bog, hog, jog, dog separate to bog to avoid b/d confusion.

QUIZ

F- UNIT 23

c+o+b=cob, dob, job, rob, sob

QUIZ

F-UNIT 24

d-o-l = doll, roll.

**30. "These words all have the letter 'u'; says 'u' in the middle.**

F-UNIT 25

c+u+b=cub, hub, rub, tub,

QUIZ

F-UNIT 26

b+u+d=bud, mud,

QUIZ

F-UNIT 27

b+u+g =bug, hug, jug, mug, rug, tug, dug

QUIZ

F-UNIT 28

c+u+p= cup, pup,

QUIZ

F-UNIT 29

h+u+m= hum, gum, sum mum.

QUIZ

F-UNIT 30

b+u+n= bun, fun, gun, run, sun,

QUIZ

Some children in FOUNDATION YEAR may take all year, or into Year 1 or all of Year 1, to fully learn these CVC words to automaticity. Allow and plan for this.

It is most important that they do learn these words fully because they are often the first syllable of many other words to spell later. E.g., bat, battery, battle, battalion. fun, funny, funnier, funfair funniest.

Spell check and dictionaries can only be used successfully if the first vowel in the first syllable is accurate.

Short vowels must be orthographically mapped to automaticity first, before beginning to learn words with long vowels, otherwise short and long vowels will be confused.

**YEAR 1 PHONIC SPELLING WORD LISTS**

Some children in Year 1 will still be learning Foundation CVC Words.

It does not matter how long the 'Learning to Read' phase continues.

It only matters that every child learns the complete lists to mastery and automaticity.

By Mid-Year 1, the National Year 1 Phonics Check is best taken by all schools. All teachers, and parents can use the free test if they wish.

The nonsense words in the check are necessary to make sure children are not guessing words.

Year 1 children noted to need additional teaching, need small group teaching as well as classroom teaching.

They also need to practice reading more decodable books at each level to consolidate their learning.

Teach only one UNIT per week. Take longer if children need.

Some children may need to stop every few UNITS to revise, before moving on. Revision is a sound teaching practice when needed. Every word meaning is discussed and used in sentences orally.

Yr 1-UNIT 1

c+r+a+b = crab, cross. Revise CVC words.

QUIZ

Yr 2-UNIT 2

c+l+i+p = clip, clap, cliff, clock, clam, clog. Revise CVC words.

Yr 1 -UNIT 3

d+r+o+p= drop, drip, drum, dress. Revise all CVC words.

QUIZ

Yr 1-UNIT 4

g+r+a+b= grab, grip, grub, grill. Revise all CVC words.

QUIZ

Yr 1-UNIT 5

g+l+a+d = glad, glum. Revise all CVC words

QUIZ

Yr 1-UNIT 6

f+l+i+p = flip, flop, flag, flat, fled, flap, flab, flick, floss. Revise all CVC words

QUIZ

Yr 1-UNIT 7

s+l+i+p = slip, slap, slim, slab, slop. Revise all CVC words

QUIZ

Yr 1-UNIT 8

s+t+o+p=stop, step, stem, still. Revise all CVC words.

QUIZ

Yr 1-UNIT 9

s+n+i+p, snap, sniff Revise all CVC words.

QUIZ

Yr 1-UNIT 10

s+p+i+t=spit, spat, spot, span, spell, spill, spin, Revise all CVC words.

QUIZ

Yr 1-UNIT 11

s+w+i+m= swim, swam, scan, Revise all CVC words.

QUIZ

Yr 1-UNIT 12

s+k+i+p=skip, skit, s+k+i+l=skill, skin, skull Revise all CVC words

QUIZ



## Yr 1-UNIT 13

p+l+u+m=plum, plug, plus, plop Revise all CVC words

QUIZ

## Yr 1-UNIT 14

p+r+a+m=pram, prick, press, prop, prim Revise all CVC words

QUIZ

## Yr 1-UNIT 15

t+r+a+m = tram, trap, trip, track, trick, truck. Revise CVC words

QUIZ

'ck' as in kick is a digraph. ADD to 'c' sound square.

'Sometimes 2 letters make 1 sound.'

Fluro the 2 letters to show the concept.

## Yr 1-UNIT 16

f+r+o+g, from, frock, frill Revise CVC words

QUIZ

## Yr1-UNIT 17

b+e+s+t=best, jest, nest, rest, test, west, cost, lost, must, just, rust, bust, mist, cost, lost, twist. Revise CVC words

QUIZ

## Yr 1-UNIT 18

b+a+n+d=band, sand, stand, hand, grand, land, brand, bend send, mend, spend, blend, trend, blend, Revise CVC words

QUIZ

## Yr 1-UNIT 19

t+e+n+t=tent, bent, lent, went, vent, print, tint, felt, melt, belt, milk, silk, help, crept, swept Revise CVC words

QUIZ

## Yr1\_UNIT 20

c+a+m+p=camp, damp, lamp, stamp, dump, pump, jump, hump, lump, thump, stump, limp, Revise CVC words

QUIZ

## Yr 1-UNIT 21

t+u+s+k=tusk, rusk, busk, risk, desk, Revise CVC words

QUIZ

## Yr 1-UNIT 22

p+i+n+k=pink, sink, wink, drink, blink, stink, think, bank, tank, thank, bunk, trunk, skunk,

QUIZ

## Yr1-UNIT 23

l+e+f+t=left, lift, soft, drift, act, sift, golf. shelf, slept, next, text, just Revise CVC words

QUIZ

## Yr1-UNIT 24

s+p+l+a+sh=splash, split, spring, sprung, scrap, scrub, scrum, script, string, strap, strong,

QUIZ

## Yr 1-UNIT 25

Teach "The letter 'y' makes an 'l' sound in these words"

s+k+y=sky, my, try, sly, cry, fry, by, sty, spy, shy, fly, dry.

ADD 'y' as in s+k+y=sky in a new sound box.

## Yr 1-UNIT 26

## DIGRAPHS

Only teach one example of each digraph at a time to avoid children learning confusion.

Once one group is learned to mastery, then other examples can be learned. Incidental teaching continues during the day.

"Sometimes two letters go together to make one sound." Fluro the 2 letters that make the sound.

Letters 's + h' go together make one sound 'sh' as in ship – Fluro both letters

Letters 'c + h' go together to make one sound 'ch' as in chin – Fluro both letters

Letters 't + h' go together to make 1 sound 'th' as in thin – Fluro both letters

Letters 'n + g' go together to make 1 sound 'ng' as in ring – Fluro both letters

Letters w + h go together to make 1 sound 'w' as in when. Fluro both letters.

Add new sounds to new sound squares.

Yr 1-UNIT 27

sh+i+p = ship, shop, shell, shut, shed, shy, she, wish, dish, fish, bash, dash, gash, lash, mash, rash, sash,

QUIZ

Yr 1-UNIT 28

th+i+s =this, then, that, than, the, them,

QUIZ

Yr1-UNIT 29

wh+i+p=whip, when, why, wham, which, whiz

QUIZ

Yr 1-UNIT 30

s+i+ng= sing, ding, thing, king, ping, ring, wing, sang, bang, fang, hang, pang, rang, tang, dong, thong, long, song, sung, dung, lung, hung, rung.

QUIZ

Yr1-UNIT 31

ch+i+p=chip, chop, chap, chin, chick, chat, chill, check, much, such, rich.

QUIZ

Yr 1-UNIT 32

h+i+l = hill, fill, bill, mill, kill, sill, will, sell, bell, tell, well, fell, roll, doll, dull, gull,

QUIZ

YR 1-UNIT 33

QUIZ

h+i+ss = hiss, miss, kiss, less, toss, boss, hiss, mess, moss,

QUIZ - ADD 'ss' to the 's' sound square.

Yr 1-UNIT 34

j+a+ck=jack, back, hack, lack, pack, rack, sack, tack, sick, chick, kick, wick, nick, pick, dock, clock, lock, mock, sock, tock, rock, neck, peck, check.

QUIZ

## REVISION

Allowing time for revision stops during the 34 Units out of the 40 weeks in the school year and for general revision of all words in the final six weeks.

Mix word groups up and quiz to see if children have learned to discriminate between short vowels yet or not. If not, more revision is needed.

### YEAR 2 PHONIC SPELLING WORD LISTS.

- Teach the vowel word groups separately to avoid learning confusion.  
SAME SOUND-SAME SYMBOL
- Do not teach mixed examples together until each group is learned to mastery first.  
Eg Teach b+ay=bay, h+ay=hay, l+ay=lay, m+ay=may, s+ay=say, w+ay=way

But not way, main, cake, eight, together until all groups have been orthographically mapped first.

In this list, different symbols for the same sound are separated which is critical for best learning. Every time an error is practiced it is being learned.

- Take enough time for children to learn these words.  
Some children may learn two units per week. Other children may need to take 2 or more weeks to learn each UNIT.
- Revision may be needed every few UNITS.
- Some children may be learning these words during Year 3 or Year 4.  
Let them.

### 31. Teach only words with ONE syllable in Year 2.

Yr 2- Unit 1

Re-teach "two letters go together to make one sound." (Digraph)

Yr 2-Unit 2

b+ay=bay, hay, lay, may, pay, ray, say, tray, way, day, stay, away, sway, spray, pray, clay  
Fluro the digraph letters

QUIZ

Yr 2-UNIT 3

b+ar=bar, car, far, jar, star, tar, card, yard, hard, farm, arm, harm, art, start, tart, cart, ark, bark, mark, shark, park, dark, harp, sharp

Fluro the digraph letters. ADD 'ar' to a new sound square.

QUIZ

Yr 2-UNIT 4

b+ee=bee, see, tree, free, feet, sweet, keep, deep, creep, steep, sleep, sweep, weep  
f+ee+d=feed, need, seed, peel, feel, queen, green, been, seek, week,

QUIZ

Fluro the letters that make the sound.

ADD 'ee' to a new sound square.

(Don't teach 'ea' as in bean now, as if taught together they will be confused.

Only when words with 'ee' have been fully learned, another phonic variation of the sound is taught.)

## Yr 2 UNIT 5

b+ir+d=bird, third, girl, whirl, fir, first, sir, stir, skirt, shirt, dirt, dirty, third, thirst, thirst, chirp  
ADD 'ir' to a new Sound Square.

QUIZ.

## Yr 2-UNIT 6

oa+t=oat, boat, coat, float, goat, moat, oat, throat, soap, loaf, soak, croak, cloak,  
moan, roam, foam, roast, boast, coast, toast, toad, load, road,  
ADD 'oa' o a new Sound Square Fluro 'oa'

QUIZ

## YR 2- UNIT 7

m+oo=moo, too, zoo, moon, soon, spoon, room, boom, zoom, broom, bloom, doom.  
c+oo+l=cool, drool, stool, tool, fool, pool, school, boot, shoot, toot, hoot, loot, root,  
tooth, roof, food, mood, fool, pool, tool,

ADD 'oo' to a new Sound Square. Fluro 'oo' or underline oo

QUIZ

## Yr 2-Unit 8

f+or=for, born, horn, torn, worn, thorn, corn, fork, cork, pork, stork, form, storm, fort,  
short, horse. sport

ADD 'or' to a new Sound Square. ADD 'se' to the 's' Sound Square.

QUIZ

## Yr 2- UNIT 9

ou+f=out, shout, about, house, mouse (sometimes 's+e' makes 's' sound), bound,  
round, sound, ground, found, mound, cloud, loud, aloud, mouth, mount.

QUIZ

ADD 'ou' to a new Sound Square.

Fluro the letters that make the 'ou' as in 'out'.

## Yr 2-UNIT 10

b+oy=boy, toy, joy, royal, annoy, ahoy.

ADD 'oy' to a new Sound Square.

QUIZ

## Yr 2-UNIT 11

b+oo+k=book, cook, hook, look, nook, rook, took, sook, shook, chook, good, hood,  
wood, wool,

ADD 'oo' to a new Sound Square.

QUIZ

## Yr 2-UNIT 12

l+ea+f=leaf, eat, beat, feat, heat, meat, neat, seat, teat, wheat, cheat, pea, sea,  
tea, flea, team, beam, ream, steam, cream, stream, read, bead, lead, each, peach,  
beach, reach, teach, bean, mean, clean, speak

ADD 'ea' to the 'ee' Sound Square.

Fluro the letters that make the digraph.

QUIZ

## Yr 2-UNIT 13

r+ai+n=rain, pain, main, stain, grain, chain, drain, train, brain, wait, bait, tail, mail, snail,  
trail, hail, pail, nail, sail, bail, wail, paint, paid, raid, laid, maid

ADD 'ai' to the 'ay' Sound Square.

QUIZ

## Yr 2-UNIT 14

a+ll=al, ball, call, fall, hall, mall, stall, tall, wall, small,  
ADD 'a' to the 'or' Sound Square.

QUIZ

Yr 2-UNIT 15

b+e=be, he, she, we, me

ADD 'e' to the 'ee' Sound Square.

QUIZ

Yr 2-UNIT 16

b+ow=bow, low, row, grow, glow, blow, yellow, flow, throw, snow, slow, crow,

ADD 'ow' to the 'oa' Sound Square.

QUIZ

Yr 2-UNIT 17

ADD 'th' to a new Sound Square

th+i+n=thin, thick, think, thank, thirst, third

QUIZ

Yr 2-UNIT 18

Sometimes 3 letters go together to make a new sound.

air (is 1 sound), f+air=fair, hair, pair, stair, chair,

ADD 'air' to a new Sound Square Fluro 'air' or underline air

QUIZ

Yr 2-UNIT 19

The magic 'e'.

Some words have a 'magic'e on the end that makes the vowel say its letter name.

(Split digraph)

Fluro the letters that make the sound. e.g., cake, **these**, **bike**, **poke**, **cute**.

Yr 2-UNIT 20

bake, cake, fake, flake, hake, Jake, lake, make, sake, rake, take, wake, shake, snake,  
brake, whale, tale, pale, stale, bale, date, late, fate, crate, plate, gate, made, shade,  
spade, lane, cape, tape, gave, brave, shave, save, safe

ADD a-e to the 'ay' Sound Square.

QUIZ

Yr 2-UNIT 21

kite, bite, site, white, bike, hike, like, ripe, wipe, tripe, stripe, mine, nine, fine, shine, line,  
life, five, hive, drive, pile, smile, time, lime, slime, chime, side, hide, ride, slide, five, hive,  
drive,

ADD i-e to the 'y' as in cry Sound Square.

QUIZ

Yr 2-UNIT 22

bone, cone, stone, home, rose, hose, dose, chose, nose, rope, hope, joke, woke,  
spoke, broke, broke, note,

ADD o-e to the 'oa' Sound Square.

QUIZ

Yr 2-UNIT 23

cube, tube, flute, mute, cute, tune, dune, June, prune.

ADD 'u-e' to the 'oo' as in moon Sound Square.

QUIZ

Yr 2- UNIT 24

s+c+r+ew = screw, scream, screen, scrub, scrape, scratch, scroll, scrap,

## QUIZ

Yr 2-UNIT 25

s+p+l+a+sh = splash, splint, split, splint, splits, string, strong, strung, strain, stray, stroll, strap, straw, street, strong, stream, strand, stripe, strike, stroke, struck.

## QUIZ

Yr 2-UNIT 26

s+p+r+i+ng = spring, sprig, sprint, spray, sprain, sprout, spree.

## QUIZ

Yr 2-UNIT 27

b+oi+l=boil, coil, soil, spoil, foil, oil, join, coin, point, joint, moist, noise,  
ADD this letter-sound to the 'oy' Sound Square.

## QUIZ

Yr 2-UNIT 28

p+aw=paw, law, jaw, raw, saw, claw, draw, straw, dawn, prawn, lawn, fawn, hawk, shawl, crawl,

Fluro the letters that make the sound 'aw'.

ADD 'aw' to the 'or' Sound Square.

## QUIZ

Yr 2- UNIT 29

d+ie=die, pie, tie, lie, cried, lied, died, tied, dried

Add 'ie' to the 'y' as in cry sound square.

## QUIZ

Yr 2-UNIT 30

f+ew=few, new, blew, grew, flew, crew, brew, drew, screw, threw, chew,  
ADD 'ew' to the 'oo' as in moon Sound Square.

## QUIZ

Yr 2- UNIT 31

h+ear= hear, near, clear, tear, spear, shear, year, gear, dear, fear, rear.

Fluro the trigraph letters

ADD 'ear' to a new Sound Square.

## QUIZ

Yr 2-UNIT 32

ADD 'ea' to the 'e' as in egg Sound Square.

r+ea+d=read, head, bread, ahead, spread, thread, tread, read, deaf,

## QUIZ

Yr 2-UNIT 33

c+a+l+f= calf, half, glass, pass, class, grass, mast, cast, last, fast,

ADD 'a ' to the 'ar' Sound Square.

## QUIZ

Yr 2- UNIT 34

f+ur=fur, surf, turf, hurt, turn, return, burn, curb, church, lurch, curl, purse, nurse, curse, burst,

ADD 'ur' to the 'ir' Sound Square.

## QUIZ

Yr 2-UNIT 35

o+l+d=old, gold, cold, bold, fold, told, sold, hold,

## QUIZ

Yr UNIT 36

c+are = care, bare, rare, fare, dare, hare, mare, share, stare, spare, glare, square, scare,

Fluro the letters that make the sound.

ADD 'are' to the 'air' Sound Square.

QUIZ

Yr 2-UNIT 37

p+u+t=put, push, pull, bush, bull, bully, full,

ADD 'u' to the 'oo' as in wool Sound Square.

Yr 2-UNIT 38

f+igh+t=fight, light, night, might, tight, sight, right, fright, flight, bright, slight, sigh, high

ADD 'igh' to the 'ie' as in pie Sound Square. Fluro the letters 'igh'.

QUIZ

Yr 2-UNIT 39

c+ore=core, bore, gore, more, sore, tore, wore, shore, snore, score, store, adore

ADD 'ore' to the 'or' Sound Square. Fluro the letters 'ore'.

QUIZ

Yr 2-UNIT 40

c+ue= cue, due, clue, blue, glue, flue, true,

ADD 'ue' to the 'oo' as in moon Sound Square.

QUIZ

Yr 2-UNIT 41

h+er=her, verb, herb, fern, germ, perm, term, herd, nerve, serve,

ADD 'er' to the 'ir' Sound Square.

ADD 've' to the 'v' Sound Square.

QUIZ

Yr 2/3-UNIT 42

b+ear=bear, pear, wear, tear as in tear the paper.

Fluro the letters that make the sound.

ADD 'ear' to the 'air' Sound Square.

QUIZ

Yr 2/3-UNIT 43

w+a+s=was, want, what, wasp, wand, wander, want, wash, watch, wasp, swan, swap, swat, swab,

ADD 'a' to the 'o' Sound Square.

QUIZ

Yr 2/3UNIT 44

b+a+ch=batch, catch, match, latch, patch, hatch, scratch, stretch, retch, fetch, stitch, witch, bitch, snitch, switch, pitch.

ADD 'tch' to the 'ch' Sound Square Fluro the letters 'tch'.

QUIZ

Yr 2/3 UNIT 45

d+o+ne=done, son, come, some, glove, dove, love, month,

ADD 'o' to the 'u' Sound Square.

QUIZ

Yr 2/3 UNIT 46

w+or+m=worm, word, world, work, world, worst, worse, worth,

Fluro the letters that make the sound.

ADD 'or' to the 'ir' Sound Square.

## QUIZ

Yr 2/3 UNIT 47

s+au+ce=sauce, saucer, haunt, launch, pause, cause.

ADD 'au' to the 'or' Sound Square.

ADD 'ce' to the 's' Sound Square.

ADD 'se' to the 's' Sound Square.

## QUIZ

Yr 2/3 UNIT 48

qu+ee+n=queen, quit, quick, quack, queer, quilt, quiet, quail, quin

Fluro the letters 'q+u' that make the digraph sound.

ADD q to a new Sound Square. q maybe two sounds 'c' and w.

## QUIZ

Yr 2/3 UNIT 49

face, race, pace, lace, place, grace, trace, space, ice, nice, mice, rice, price, dice,

slice, spice, twice

## QUIZ

Yr 2/3 UNIT 50

w+ar=war, warn, warm, wart, ward,

ADD 'ar' to the 'or' Sound Square.

## QUIZ

There are many other PHONIC WORD GROUPS for children to learn in Years 3 to 6.

EG photo = ph+o+t+o, graph =g+r+a+ph, orphan, phonics, phone.

l+a+mb=lamb, limb, comb, thumb, crumb, bomb, numb, plumb-er

kn+i+fe=knife, knit, knot, knead, known, knew, knee, knight, knob, knack, knock.

wr+e+n=wren, write, wrap, wring, wrist, wrote, wrong.

**This is the learning of the foundational Sound to Symbol Alphabetic Code, that the NITL 2005 recommended.** The NITL also recommended teaching phonic spelling from Foundation Year through to Year 6, as evidence based best practice.

- Every word in the English language can be and is sounded out in oral language, as we speak.
- Using a complete 44 SOUND PHONIC CHART, **every word in the English Dictionary can be phonetically spelt out, each 'irregular spelling' can be logged in an appropriate sound square.**

**BUT when teaching young children, teaching and learning needs to begin slowly from simplest to complex, step by step, at the learning pace of each child.**

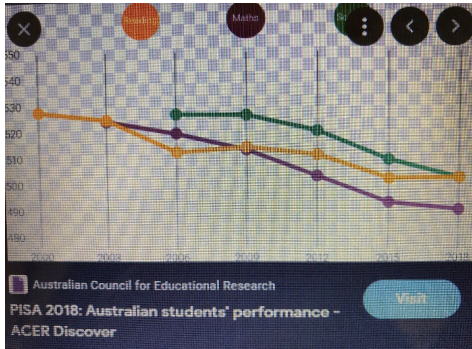
**This is accepted practice for learning all new skills that require accuracy.**

If this foundational Phonic Word Group List is taught in every Foundation, Year 1 and Year 2 class for the first 3 years of Primary School from 2022 and every child has learned to read, spell and write these words, they will have a strong foundational base of knowledge, on which to build in Years 3 to 6 and beyond.

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## APPENDIX 2

### DIRECT TEACHING OF FOUNDATIONAL F-2 MATHEMATICS SKILLS

#### BACKGROUND

The following F-2 Mathematics Curriculum was in the Education Department before 1980 and has since been used by special education teachers because 'it always worked' to teach all children the foundational Mathematics Concepts and Operations, Counting, Place Value, Operations and Measurement.

- Children who fail to understand Mathematics in late Primary and Secondary School, have not learned some or most of the following information.
- Mathematics Concepts and Operations need to be taught and fully understood and mastered before children can be asked to use skills to solve mathematical problems.
- **New information needs to be taught step by step**, with much practice time before each concept and operation can be fully learned to mastery. Young children are not mini adults.
- **TAUGHT BUT NOT LEARNED**  
**The current Mathematics Curriculum is too crowded**, forcing teachers to rush through the curriculum, leaving insufficient time for children to practice and revise new information so they can learn it.  
 This is why children do not learn automatic number facts.

#### This puts unnecessary pressure on teachers as well as young children.

- **Too much text.**  
 Some failure is due to illiteracy. Reduce the amount of text in Mathematics.
- **Constructivism, or child discovery learning is inappropriate** for teaching F-2 foundational Mathematics skills, because **Mathematics is an exact skill that requires accuracy.**

**As with teaching Initial Literacy Skills, every numeral can be an unknown numeral to a young new learner.**

**Every new Mathematical concept can be an unknown concept to a young new learner.**

**Every Mathematical operation is an unknown operation to a young, new learner.**

- **No calculators**

Calculators should not be used until Year 6, after all the Mathematical Concepts and Operations are fully learned and understood first. Children may 'learn' that  $14+3=17$  by calculator, but not what it means.

Using calculators instead of teaching and learning foundational Mathematics Concepts and Operations does not teach understanding of Mathematics.

- **Teach the four Concepts and Operations of Mathematics separately before expecting use of them together and to be used for problem solving.**

Addition is well known by children but the Concepts of Subtraction (Take Away) Multiplication (Groups of), Division (How Many Groups Of) and Fractions (How many parts of =  $\frac{1}{4}$  equals one part out of 4 equal parts) need to be taught and revised SEPARATELY and so they can be fully understood.

- **Foundation – Year 2, Expectations set Too High, too Soon.**

Raising education standards equates to more effective teaching for more effective learning, not to setting bars or standards unrealistically too high.

**Foundation –**

Learning about Numbers 1-10, not 1-20. (Except for Counting to 100 by 10's)

**Year 1 –**

Learning about numbers 1-20, not 1-100 (Except for Counting 1-100 by 10's)

**Year 2 –** Learning about numbers 1-100, but not to 1000 yet.

**Year 3 –** Learning about numbers 1-1000, not to 10,000 yet.

**Year 4 –** Learning about numbers 1 to 10,000

**Year 5 –** Learning about numbers 1 to 100,000

**Year 6 –** Learning about numbers 1 to 1,000,000

- **Mathematics needs to be taught daily – 1 hour.**

In order to learn new information to mastery, new young learners need time to practice and revise new information regularly, otherwise it is easily forgotten.

At present, mathematics is infrequently and irregularly taught in Primary Schools. E.g., Fractions are taught in Term 3, but often not again until Term 3 the following year.

"We aren't doing maths at the moment because we are doing Inquiry," which is often for a whole month or a whole term.

Inquiry is not suitable for F-2 foundational Mathematics. Mathematics is an exact skill.

- **Measurement**

The curriculum states teaching length, capacity, mass and duration without reference or detail about the teaching of these concepts, and the need for new young learners to understand these concepts before being expected to use them to calculate.

- **Teaching of Place Value needs more focus.**

Ones, Tens, Hundreds needs to be fully understood before young children are able to understand the values of 1000's, 10,000, 100,000 and 1,000,000.

- **F-2 Foundational Mathematics Skills**

Teaching session of 60 mins every day – Incidental teaching occurs during the day.

COUNTING	F- Using 1-10	Year 1 -Using 1-20	Year 2 – Using 1-100
PLACE VALUE	"	"	"
CONCEPT OF ADDITION	"	"	"
OPERATION OF ADDITION	"	"	"
CONCEPT OF SUBTRACTION	"	"	"
OPERATION OF SUBTRACTION	"	"	"
CONCEPT OF MULTIPLICATION	"	"	"
OPERATION OF MULTIPLICATION	"	"	"
CONCEPT OF DIVISION	"	"	"
OPERATION OF DIVISION	"	"	"
OPERATION OF FRACTIONS	"	"	"
CONCEPT OF MEASUREMENT OF LENGTH, WEIGHT, CAPACITY, MONEY, TIME	"	"	"
OPERATIONS OF MEASUREMENT OF LENGTH, WEIGHT, CAPACITY, MONEY, TIME	"	"	"
SHAPES, RECOGNITION, DRAWING, PROPERTIES	"	"	"

- **Rationale for Foundation Mathematics to use Numbers 0-10.**

Children will learn mathematical operations more easily using smaller numbers. Counting is the exception in counting by 10's to 100. **"Teach the children thoroughly using numbers one to ten, and then but only then, they can learn the rest. (M Tobias 1977)**

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- **Only Use Terminology young children know**

ALWAYS teach from what children know.

+ = 'Add up',

- = 'Take Away',

X = 'Groups of',

÷ = 'How many groups of',

$\frac{1}{2}$  = 1 part out of 2 equal parts,  $\frac{1}{4}$  = 1 part out of 4 equal parts. Etc

how long? how short? how tall? how heavy, how light, how much liquid?

- **Always have a tub of 3D objects on each table every lesson (F-2)**

Teach every new concept using 3D objects, then 2D, then the numerical notation in that developmental order.

"Use counters in the cupboard if you need them." Children will not single themselves out to go in front of their peers to go to the cupboard to get counters, 'if they need'.

Children may learn that  $2 + 5 = 7$ , but have they memorized the answer, or can they show or prove the equation with counters?

Knowledge of all properties of the numbers 1-10 need to be taught and revised until they are fully learned to long term memory for automatic retrieval.

- **Have number strips on every table for F-2 Mathematics teaching.**

Foundation, Numbers 1-10,

Year 1, Number 1-20,

Year 2, 1-100 Number Chart in rows of 10.

Most children will need to view the visual image of numbers 1-10 in Foundation.

Many children will continue to need to view the numbers in Year 1.

Some children will need to view to confirm the numbers in Year 2.

Some children will use the number strip as a number line.

If all tables have the number strip, children who need to view it will not feel 'different'.

## FOUNDATION MATHEMATICS

### Every Term

Numbers 0-10, Recognition, Writing, mark the correct starting position and directional arrow.

Properties, making groups of 2,3,4,5,6,7,8,9,10 using many objects.

Putting 'fences' around groups now leads well to brackets later.

Cardinal Numbers – Quantities 1-10.

Ordinal Numbers – Order 1<sup>st</sup> to 10<sup>th</sup>.

### Term 1

**Every session 1) whole class revision of previously taught information.**

**2) whole class teaching of new information**

**3) practice tasks that are varied for individual differences.**

**Counting:** Every session, all year.

Always show what is being counted with 3 D objects or on a bead frame.

1-10 by 1's, by 2's, backwards 10-1, 1-20 by 1's, by 2's, 1-100 by 10's.

Children need to count using 3D objects to learn the meaning, otherwise they may memorise the numbers but not understand the numeracy involved.

**Teach the CONCEPT then the OPERATION of ADDITION** using numbers 0-10

Terminology 'Add', 'Plus' Use terms the children know.

Use 3D objects then 2D (\*\* + \*\*\* = 5) then numbers. Use Number strip – add on.

1+1=2, 1+2=3, 1+4=5, 1+5=6, 1+6=7, 1+7=8, 1+8=9, 1+9=10. 2+2=4, 3+3=6, 4+4=8, 5+5=10, 8+2=10, 7+3=10, 6+4=10, 5+5=10, 6+4=10, 7+3=10, 8+2=10, 9+1=10, 2+3=5, 3+4=7, 8+1=9, 3+5=8, 3+4=7, 4+2=6, 6+2=8, 2+5=7, 2+0=2, 5+0=5, 4+5=9 etc.

When children know the answers to these equations automatically and can show or prove the answers with 3D objects and 2D objects and write the equations, then they are ready to move on to learn the concept and operation of Subtraction.

This knowledge needs to be revised regularly, but separately to other operations to avoid learning confusion between operations.

Groups may be needed.

**Measurement:** Vocabulary is also being taught and learned.

### Length

how long, how tall, how wide, how short, how deep, using numbers 1-10.

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Show 30 cm rulers. Concept of mm, cm, m, kms. Teach one at a time.

$2 \text{ cms} + 3 \text{ cms} = 5 \text{ cms}$ ,  $2 \text{ m} + 3 \text{ m} = 5 \text{ m}$ .

Draw attention to odometers in cars to learn about kms.

### **Weight**

How heavy, how light, how much weight? Using numbers 1-10.

Mg, Grams, kilograms, tonnes (elephants, trucks). Household grocery items

Heavier than, lighter than, using Balance scales. Children's weight.

$2 \text{ gr} + 4 \text{ gr} = 6 \text{ gr}$ ,  $5 \text{ kgs} + 3 \text{ kg} = 8 \text{ kg}$  etc

### **Capacity**

'How much liquid can fit into' x ? mls, l. 2l familiar grocery items

Use words the children know.

Measuring jugs – water  $3 \text{ mls} + 7 \text{ mls} = 10 \text{ mls}$  etc How many mls to fill the jug?

### **Time**

Class calendar – mark off days of the week, months of the Year. Seasons.

Children's Birthdays. Recess time, lunch time, afternoon play time.

O'clock, 9:00 only the hour,

classroom clock both analogue and digital,

draw attention to the hour on both clocks, as it happens, daily.

### **Money**

Recognition of coins, notes.

This is more important now more than ever because children do not get as much experience of using money or going shopping as in the past.

They still need to learn the values of money by using coins and notes in order, to understand the concept and operation of money.

**Shapes.** Recognition, draw.

circle, start at 1 o'clock, anti-clockwise.

### **Term 2**

**Counting** 1-10 As for Term 1.

3d objects and number strips on all tables

**Revise ADDITION.**

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1+1=2, 1+2=3, 1+4=5, 1+5=6, 1+6=7, 1+7=8, 1+8=9, 1+9=10. 2+2=4, 3+3=6, 4+4=8, 5+5=10, 8+2=10, 7+3=10, 6+4=10, 5+5=10, 6+4=10, 7+3=10, 8+2=10, 9+1=10, 2+3=5, 3+4=7, 8+1=9, 3+5=8, 3+4=7, 4+2=6, 6+2=8, 2+5=7, 2+0=2, 5+0=5, 4+5=9 etc.

**Teach the CONCEPT OF SUBTRACTION** "take away" using numbers 0-10.

Use words children understand.

Use 3D objects, then 2D – 5 lines or circles, take away 2, cross off 2, how many left?

10 take away 4 = how many left? Then the numerical notation  $4-2=2$

10-1=9, 10-2=8, 10-3=7, 10-4=6, 10-5=5, 10-6=4, 10-7=3, 10-8=2, 10-9=1, 10-10=0, 9-8=1, 9-7=2, 9-6=3, 9-5=4, 9-3=6, 9-2=7, 9-1=9, 9-0=9, 5-3=2, 8-3=5, 7-6=1. Etc

Do not mix operations until Year 3, until all operations are fully learned, or they will be easily confused.

Until all possible subtraction equations using number 1-10 are learned to automaticity and children can 'show' or 'prove' the answer using 3D and 2D objects, this operation has not yet been fully earned. Use groups.

## Measurement

### Length

how long, how tall, how wide, how short, how deep, using numbers 1-10.

Show 30 cm rulers. Concept of mm, cms, m, kms. Teach one at a time.

$2\text{ cms} + 3\text{ cms} = 5\text{ cms.}$ ,  $2\text{ m} + 3\text{ m} = 5\text{ m.}$

Draw attention to odometers in cars to learn about kms.

### Weight

How heavy, how light, how much weight? Using numbers 1-10.

Mg, Grams, kilograms, tonnes (elephants, trucks). Household grocery items

Heavier than, lighter than, using Balance scales. Children's weight.

$2\text{ gr} + 4\text{ gr} = 6\text{ gr}$ ,  $5\text{ kgs} + 3\text{ kg} = 8\text{ kg}$  etc

### Capacity

'how much liquid can fit into' ? mls, l. grocery items Show.

Measuring jugs, water  $3\text{ mls} + 7\text{ mls} = 10\text{ mls}$  etc

### Time

Days of the week, Months of the Year, recess time, lunch time, play time.

Tick days off on calendar. Tick months off on calendar. Children's birthdays.

O'clock, 9:00 only the hour, classroom clock both analogue and digital, draw attention to the hour, as it happens, daily.

## Money

Recognition of all coins, notes.

This is more important now than ever because children do not get as much experience of using money or going shopping as in the past. They need to learn values of money by using coins, in order to understand money.

**Shape** Recognition Draw Circle

## Term 3

**Counting** by 1's to 10, by 2's to 10, by 1's to 20, by 2's to 20, by 10's to 100

**Revise Addition and Subtraction separately.**

Say "Today these equations (sums) are all '**add.**' Children show by 3D or 2D objects

1+1=2, 1+2=3, 1+4=5, 1+5=6, 1+6=7, 1+7=8, 1+8=9, 1+9=10. 2+2=4, 3+3=6, 4+4=8, 5+5=10, 8+2=10, 7+3=10, 6+4=10, 5+5=10, 6+4=10, 7+3=10, 8+2=10, 9+1=10, 2+3=5, 3+4=7, 8+1=9, 3+5=8, 3+4=7, 4+2=6, 6+2=8, 2+5=7, 2+0=2, 5+0=5, 4+5=9 etc.

"These sums are all **take away.**" Children prove by 3D or 2D objects

10-1=9, 10-2=8, 10-3=7, 10-4=6, 10-5=5, 10-6=4, 10-7=3, 10-8=2, 10-9=1, 10-10=0, 9-8=1, 9-7=2, 9-6=3, 9-5=4, 9-3=6, 9-2=7, 9-1=9, 9-0=9, 5-3=2, 8--5, 7-6 = 1. Etc

**TEACH CONCEPT AND OPERATION OF MULTIPLICATION – daily**

'**groups of = X**' e.g. 4 X (groups of) 2 = 8    \*\* / \*\* / \*\* / \*\* / = 8

3 groups of 3 = 3 X 3    \*\*\*    \*\*\*    \*\*\* = 9 altogether

1X1=2, 1X3=3, 1X4=4, 1X5=5, 1X6=6. 1X7=7, 1X8=8, 1X9=9, 1X10=10, 2X2=4, 2X3=6, 2X4=8, 2x5=10, 3X3=9, 2x4=8, 3x2=6, 5x2=10, 2x0=0, 4x0=0, 8x8=0. Etc.

Until children have learned these equations to automaticity and can show or prove the answers using 3D and 2D objects, they need to continue revision. Groups may be needed.

**Measurement - daily**

### Length

how long, how tall, how wide, how short, how deep, using numbers 1-10.

Show 30 cm rulers.    Concept of mm, cm, m, kms. Teach one at a time.

2 cms + 3 cms = 5 cms., 2 m + 3 m = 5 m.

Draw attention to odometers in cars to learn about kms.

### Weight

How heavy, how light, how much weight? Using numbers 1-10.

Mg, Grams, kilograms, tonnes (elephants, trucks). Household grocery items

Heavier than, lighter than, using Balance scales. Children's weight.

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2 gr + 4 gr = 6 gr, 5 kgs + 3 kg = 8 kg etc

### Capacity

how much liquid can fit into ? mls, 1l, 2l, everyday grocery items

Measuring jugs – water 3 mls + 7 mls = 10 mls etc

### Time

Days of the week, Months of the Year, Birthdays, recess time, lunch time, play time.

Children's birthdays, tick days off and months off on calendar.

O'clock, 9:00 only the hour, classroom clock both analogue and digital, draw attention to the hour, as it happens, daily. Just o'clock not half past yet.

### Money

Recognition of coins, notes.

This is more important now than ever because children do not get as much experience of using money or going shopping as in the past. They need to learn values of money by handling coins and notes, in order to understand money.

**Shapes** Recognize. Draw. circle square

### Term 4

**Counting** As Terms 1,2,3. 1-10 backwards, forwards from any number. Count from 5 to 9. Etc.

**Revise ADDITION, SUBTRACTION, MULTIPLICATION**, separately. Do not mix yet.

Say "Today these equations (sums) are all '**add.**' Children show by 3D or 2D objects

1+1=2, 1+2=3, 1+4=5, 1+5=6, 1+6=7, 1+7=8, 1+8=9, 1+9=10. 2+2=4, 3+3=6, 4+4=8, 5+5=10, 8+2=10, 7+3=10, 6+4=10, 5+5=10, 6+4=10, 7+3=10, 8+2=10, 9+1=10, 2+3=5, 3+4=7, 8+1=9, 3+5=8, 3+4=7, 4+2=6, 6+2=8, 2+5=7, 2+0=2, 5+0=5, 4+5=9 etc.

or "These sums are all **take away.**" Children prove by 3D or 2D objects

10-1=9, 10-2=8, 10-3=7, 10-4=6, 10-5=5, 10-6=4, 10-7=3, 10-8=2, 10-9=1, 10-10=0, 9-8=1, 9-7=2, 9-6=3, 9-5=4, 9-3=6, 9-2=7, 9-1=9, 9-0=9, 5-3=2, 8-3=5, 7-6=1. Etc

"These equations are all 'groups of' or **multiply.** Children prove by 3d or 2d objects.

1X1=2, 1X3=3, 1X4=4, 1X5=5, 1X6=6. 1X7=7, 1X8=8, 1X9=9, 1X10=10, 2X2=4, 2X3=6, 2X4=8, 2X5=10, 3X3=9, 2X4=8, 3X2=6, 5X2=10, 2X0=0, 4X0=0, 8X8=0. Etc.

**Teach Concept and Operation of Division.** Say "How many groups of?"

IIIIII 6 how many groups of 3 III / III = 2. (Shared between is confusing.)

10 ÷ 5 = 2, 10 ÷ 2 = 5, 9 ÷ 3 = 3, 8 ÷ 2 = 4, 8 ÷ 4 = 2, 6 ÷ 2 = 3, 6 ÷ 3 = 2, 5 ÷ 5 = 1, 4 ÷ 4 = 1, 4 ÷ 2 = 2, 3 ÷ 1 = 3.

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Until children have learned these equations to automaticity and can show or prove the answers using 3D and 2D objects to show they understand the concept and operation, they need more revision.

**TEACH THE CONCEPT OF FRACTIONS** Half = one part out of two parts =  $\frac{1}{2}$

Half of shapes. Colour one part out of two parts or one half.

Show half of groups of 2,4,6,8,10. Half of 6 is 3. Etc.

### **Measurement**

#### **Length**

how long, how tall, how wide, how short, how deep, using numbers 1-10.

Show 30 cm rulers. Concept of mm, cms, m, kms. Teach one at a time.

$2 \text{ cms} + 3 \text{ cms} = 5 \text{ cms.}$ ,  $2 \text{ m} + 3 \text{ m} = 5 \text{ m.}$

Draw attention to odometers in cars to learn about kms.

#### **Weight**

How heavy, how light, how much weight? Using numbers 1-10.

Mg, Grams, kilograms, tonnes (elephants, trucks). Household grocery items

Heavier than, lighter than, using Balance scales. Children's weight.

$2 \text{ gr} + 4 \text{ gr} = 6\text{gr}$ ,  $5 \text{ kgs} + 3 \text{ kg} = 8 \text{ kg}$  etc

#### **Capacity**

how much liquid can fit into ? mls, l. grocery items

Measuring jugs – water  $3 \text{ mls} + 7 \text{ mls} = 10 \text{ mls}$  etc

**Time** class calendar. Mark off days, months. Analogue and digital clock.

Days of the week,

Months of the Year,

Birthdays,

recess time, lunch time, play time.

O'clock, 9:00 only the hour, draw children's attention to the hour, as it happens, daily.

#### **Money**

Recognition of coins, notes. No change yet in teaching sessions.

This is more important now than ever because children do not get as much experience of using money or going shopping as in the past. They need to learn values of money by using coins and notes, in order to understand money.

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**SHAPES** Recognition, Draw. Circle, Square, Triangle.

### SUMMARY

If all FOUNDATION YEAR children thoroughly learn and understand these foundational Mathematical Concepts and Operations by the end of Foundation Year, they will be able to build further Mathematical knowledge on a sound foundation.

Children who have natural aptitude for Mathematics can be challenged outside the DIRECT TEACHING OF FOUNDATIONAL MATHEMATICS TEACHING SESSIONS with incidental teaching throughout the day.

### YEAR 1 Numbers 1-20

Using numbers 0-20, except counting by 10's to 100

Have 1-20 number strip and tub of 3D objects on all tables daily.

Some children will need to refer to them, others to confirm. Use as number line also.

#### Each day

1. Whole class revision of previously earned information
2. Whole class teaching of new information
3. Practice of tasks suited to ability levels

**Counting** By 10's to 100.

Counting by 2's to 20 using 3D objects.

Skip counting by 2's to 20 using counters and fingers.

**Revision of all Four Operations** – one operation per week.

Teach separately until Year 3 to avoid confusion.

#### Addition

"Today we are looking at addition. (0-20)

\*\*\*\*\* add or plus or total \*\*\*\*\* = how many altogether?

We write this,  $5 + 7 = 12$  Horizontal until Year 3

Say "Today these equations (sums) are all 'add.' Children show by 3D or 2D objects

$1+1=2, 1+2=3, 1+4=5, 1+5=6, 1+6=7, 1+7=8, 1+8=9, 1+9=10, 2+2=4, 3+3=6, 4+4=8, 5+5=10, 8+2=10, 7+3=10, 6+4=10, 5+5=10, 6+4=10, 7+3=10, 8+2=10, 9+1=10, 2+3=5, 3+4=7, 8+1=9, 3+5=8, 3+4=7, 4+2=6, 6+2=8, 2+5=7, 2+0=2, 5+0=5, 4+5=9, 11+3=14, 11+6=17, 11+9=20, 12+8=20, 13+7=20, 16+4=20, 15+5=20, 17+3=20, 18+2=20, 19+1=20, 16+2=18, 16+3=19, 16+2=18, 14+5=19, 17+1=18, 12+7=19, 12+5=17, 12+6=18, 5+7=15.$

**Subtraction** "Take Away" or "Minus"

"Today we are looking at 'take away' sums. (0-20)

\*\*\*\*\* take away \*\*\*\* = how many left?

We write this  $11-4=7$  Children prove using 3d or 2d objects or number line

$10-1=9$ ,  $10-2=8$ ,  $10-3=7$ ,  $10-4=6$ ,  $10-5=5$ ,  $10-6=4$ ,  $10-7=3$ ,  $10-8=2$ ,  $10-9=1$ ,  $10-10=0$ ,  $9-8=1$ ,  $9-7=2$ ,  $9-6=3$ ,  $9-5=4$ ,  $9-3=6$ ,  $9-2=7$ ,  $9-1=9$ ,  $9-0=9$ ,  $5-3=2$ ,  $8-3=5$ ,  $7-6=1$ . Etc

$11-9=2$ ,  $11-8=3$ ,  $11-7=4$ ,  $11-6=5$ ,  $11-4=7$ ,  $11-3=8$ ,  $11-2=9$ ,  $11-1=10$ ,  $12-8=4$ ,  $12-6=6$ ,  $12-5=7$ ,  $13-7=6$ ,  $13-6=7$ ,  $13-9=4$ ,  $13-8=5$ ,  $14-7=7$ ,  $14-8=6$ ,  $14-9=5$ ,  $15-9=6$ ,  $15-6=9$ ,  $15-8=7$ ,  $16-10=6$ ,  $17-8=9$ ,  $17-5=12$ ,  $18-9=9$ ,  $18-12=6$ ,  $18-4=14$ ,  $19-3=16$ ,  $19-6=13$  etc.

If children learn the answers automatically, ask them to use 3d objects to show, to see if they understand the operation.

**Multiply** 'Groups of'

"Today we are looking at "Groups of" or Multiply (1-20)

\*\*\*\*\*

2 groups of 5 = how many altogether?

We write this  $2 \times 5 = 10$  Children show using 3d or 2d objects

$1 \times 1=2$ ,  $1 \times 3=3$ ,  $1 \times 4=4$ ,  $1 \times 5=5$ ,  $1 \times 6=6$ ,  $1 \times 7=7$ ,  $1 \times 8=8$ ,  $1 \times 9=9$ ,  $1 \times 10=10$ ,  $2 \times 2=4$ ,  $2 \times 3=6$ ,  $2 \times 4=8$ ,  $2 \times 5=10$ ,  $3 \times 3=9$ ,  $2 \times 4=8$ ,  $3 \times 2=6$ ,  $5 \times 2=10$ ,  $2 \times 0=0$ ,  $4 \times 0=0$ ,  $8 \times 8=0$ ,  $6 \times 2=12$ ,  $2 \times 6=12$ ,  $3 \times 4=12$ ,  $4 \times 3=12$ ,  $2 \times 7=14$ ,  $7 \times 2=14$ ,  $3 \times 5=15$ ,  $4 \times 4=16$ ,  $2 \times 9=18$ ,  $9 \times 2=18$ ,  $6 \times 3=18$ ,  $3 \times 6=18$ ,  $2 \times 10=20$ ,  $10 \times 2=20$ ,  $4 \times 5=20$ ,  $5 \times 4=20$

**Division** "How Many Groups Of" ('shared between' is often misunderstood)

"Today we are looking at divide or 'how many groups of?'"

We have \*\*\*\*\* 8 how many groups of 2?

\*\* \*\* \* =4

We write this  $8 \div 2 = 4$

$10 \div 5=2$ ,  $10 \div 2=5$ ,  $9 \div 3=3$ ,  $8 \div 2 = 4$ ,  $8 \div 4=2$ ,  $6 \div 2=3$ ,  $6 \div 3=2$ ,  $5 \div 5=1$ ,  $4 \div 4=1$ ,  $4 \div 2=2$ ,  $3 \div 1=3$ .

$20 \div 5=4$ ,  $20 \div 4=5$ ,  $20 \div 10=2$ ,  $20 \div 2=10$  show using 3D or 2D objects.

$18 \div 9=2$ ,  $18 \div 2=9$ ,  $18 \div 6=3$ ,  $18 \div 3=6$ ,  $16 \div 4=4$ ,  $16 \div 8=2$ ,  $16 \div 2=8$ ,  $15 \div 3=5$ ,  $15 \div 5=3$ ,  $14 \div 2=7$ ,  $14 \div 7=2$ ,  $12 \div 4=3$ ,  $12 \div 3=4$ ,  $12 \div 6=2$ ,  $12 \div 2=6$ .

If children learned any of the answers to any of these equations to automaticity, ask them to show the equation with 3D objects to check they are understanding the operation, not just memorising the answer.

**Fractions**

Cutting shapes in half. Colour one part out of two parts.

$\frac{1}{2}$  Count out half of 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 with 3D objects and

2D objects \*\*\*\*\*/\*\*\*\*\* 1 part out of two parts of 20 = 10.

**Measurement** Using numbers 1-20

**Length** 3 cm 15 cm 3 m 12 m  $3\text{cm} + 4\text{cm} = 7\text{cm}$   $12\text{cm} - 5\text{cm} = 7\text{cm}$

**Weight** 3 g 14 gm 3 kg children's weight kg  $4\text{g} + 8\text{g} = 12\text{g}$

**How much liquid?** 3 litres 12 l  $5\text{l} + 3\text{l} = 8\text{l}$

**Money** - Recognition of coins and notes

$\$3$  plus  $\$4 = \$7$   $\$14 + \$2 = \$16$   $\$20 - \$5 = \$15$  No change yet.

Properties of one dollar,  $20\text{c} + 20\text{c} + 20\text{c} + 20\text{c} + 20\text{c} = \$1$ ,

$10\text{c} + 10\text{c} + 10\text{c} + 10\text{c} + 10\text{c} + 10\text{c} + 10\text{c} + 10\text{c} + 10\text{c} + 10\text{c} = \$1$

**Time**

Days of the week, months of the year.

1 O'clock = 1:00

Only when 'o'clock is learned and understood, then teach Half Past and 3:30.

**Shapes** Recognition and drawing. circle, square. Triangle. Teach rectangle.

**SUMMARY**

If all Year 1 children understood and learned these concepts and operations by the end of Foundation Year and Year 1, they would be well placed to extend that learning during Year 2.

Much of this curriculum is repetitive, allowing time for practice to learn new concepts and operations fully, towards automaticity.

Practice of new skills is not boring whilst the learning process is taking place. It only becomes 'boring' if practiced after it has been mastered.

**YEAR 2 USING NUMBERS 0-100**

1-100 Number chart on all tables. Tub of 3D objects on all tables daily.

**Each day**

1. Whole class revision of previously earned information
2. Whole class teaching of new information

### 3. Practice of tasks suited to ability levels

#### Counting

By 1's to and from 1-100 from any number backwards and forwards.

By 2's to 20. Show 3D and 2D objects

By 10's to 100, By 5's to 100

Revise all four operations but only separately, not mixed yet.

When young children are learning new information, only teach ONE element at a time to avoid learning confusions. Eg Two operations taught together initially will result in some confusion then practice of errors.

Only with more practice using 3D objects, children notice reverse operations.

$$4+6=10, 6+4=10, 10-6=4, 10-4=6$$

$$3 \times 4=12, 4 \times 3=12, 12 \div 4=3, 12 \div 3=4$$

#### Place Value

Ones Tens Hundreds

Counting sticks, count 10, put in rubber band, count another 10, ditto until there are 10 bundles of 10 sticks. Count them by tens to 100.

Teach how to use MAB Blocks, ones, tens, hundreds. Count.

Then show  $10 + 7 = 17$ ,  $20+6=26$ , count to prove,  $60+4=64$ . Show on 1-100 Chart.

**Addition** using numbers 0-100 Horizontal equations only until Year 3.

"Today the equations we are doing are all Addition, Plus, Total.

" $1+1=2, 1+2=3, 1+4=5, 1+5=6, 1+6=7, 1+7=8, 1+8=9, 1+9=10, 2+2=4, 3+3=6, 4+4=8, 5+5=10, 8+2=10, 7+3=10, 6+4=10, 5+5=10, 6+4=10, 7+3=10, 8+2=10, 9+1=10, 2+3=5, 3+4=7, 8+1=9, 3+5=8, 3+4=7, 4+2=6, 6+2=8, 2+5=7, 2+0=2, 5+0=5, 4+5=9, 11+3=14, 11+6=17, 11+9=20, 12+8=20, 13+7=20, 16+4=20, 15+5=20, 17+3=20, 18+2=20, 19+1=20, 16+2=18, 16+3=19, 16+2=18, 14+5=19, 17+1=18, 12+7=19, 12+5=17, 12+6=18, 5+7=12.$

$3+4=7, 30+40=70, 4+5=9, 40+50=90, 49=40+9, 75=70+5$ , etc

Use 3D and 2D objects.  $54+23=57$  Show with MAB blocks and 1-100 chart.

#### Subtraction -1-100

"Today the equations are all 'take away' or 'subtract' or 'minus.'"

$10-1=9, 10-2=8, 10-3=7, 10-4=6, 10-5=5, 10-6=4, 10-7=3, 10-8=2, 10-9=1, 10-10=0, 9-8=1, 9-7=2, 9-6=3, 9-5=4, 9-3=6, 9-2=7, 9-1=9, 9-0=9, 5-3=2, 8-3=5, 7-6=1$ . Etc

11-9=2, 11-8=3, 11-7=4, 11-6=5, 11-4=7, 11-3=8, 11-2=9, 11-1=10, 12-8=4, 12-6=6, 12-5=7, 13-7=6, 13-6=7, 13-9=4, 13-8=5, 14-7=7, 14-8=6, 14-9=5, 15-9=6, 15-6=9, 15-8=7, 16-10=6, 17-8=9, 17-5=12, 18-9=9, 18-12=6, 18-4=14, 19-3=16, 19-6=13 etc.

Patterns in number 7-4=3, 70-40=30, 5-2=3 50-30=20, 57-21=36, 87-42=45 etc.

Use 1-100 chart, 3D objects, 2D objects. Show or prove the 'sums' or 'equations'.

### Multiplication – 1-100

"Today all the sums are multiplication or 'groups of'. 4 groups of 6 = 24

\*\*\*\*\*

1X1=2, 1X3=3, 1X4=4, 1X5=5, 1X6=6, 1X7=7, 1X8=8, 1X9=9, 1X10=10, 2X2=4, 2X3=6, 2X4=8, 2X5=10, 3X3=9, 2X4=8, 3X2=6, 5X2=10, 2X0=0, 4X0=0, 8X8=0. 6X2=12, 2X6=12, 3X4=12, 4X3=12, 2X7=14, 7X2=14, 3X5=15, 4X4=16, 2X9=18, 9X2=18, 6X3=18, 3X6=18,

2X10=20, 10X2=20, 4X5=20, 5X4=20 2X40=80, 2X25=50, 2X30=60,

4X2=8 40X2=80, 3X3=9 30X3=90, 2X5=10, 2X50=100,

3X5=15 5X3=15 6X6=24 7X4=28 4X7=28 Etc

No learning tables yet. Children have to learn to count in groups before learning X tables.

### Division – 1-100

Today the equations are all 'Division' or 'How many groups of?'

Always prompt with words children know.

E.g. 24 how many groups of 6 = \*\*\*\*\*/\*\*\*\*\*/\*\*\*\*\*/\*\*\*\*\* 24

24 how many groups of 4 = \*\*\*\*/\*\*\*\*/\*\*\*\*/\*\*\*\*/\*\*\*\*/\*\*\*\* 6

24 how many groups of 8 = \*\*\*\*\*/\*\*\*\*\*/\*\*\*\*\* 8

10 ÷ 5=2, 10 ÷ 2=5, 9 ÷ 3=3, 8 ÷ 2 = 4, 8 ÷ 4=2, 6 ÷ 2=3, 6 ÷ 3=2, 5 ÷ 5=1, 4 ÷ 4=1, 4 ÷ 2=2, 3 ÷ 1=3.

20 ÷ 5=4, 20 ÷ 4=5, 20 ÷ 10=2, 20 ÷ 2=10 show using 3D or 2D objects.

18 ÷ 9=2, 18 ÷ 2=9, 18 ÷ 6=3, 18 ÷ 3=6, 16 ÷ 4=4, 16 ÷ 8=2, 16 ÷ 2=8, 15 ÷ 3=5, 15 ÷ 5=3, 14 ÷ 2=7, 14 ÷ 7=2, 12 ÷ 4=3, 12 ÷ 3=4, 12 ÷ 6=2, 12 ÷ 2=6.

100 ÷ 50=2, 50 ÷ 10=5, 60 ÷ 10=6, 40 ÷ 10=4, 80 ÷ 10=8, 8 ÷ 4=2, 80 ÷ 40=2, 6 ÷ 2=3, 60 ÷ 30=2.

Children use 3D or 2D objects to work out these equations or show how.

### Automatic Number Facts

When adults have learned automatic number facts, it is due to multiple practices, the amount of which varying due to their individual differences.

Children need to have multiple practices in, not just learning answers 'off by rote', but by learning answers using 3D and 2D objects many times, so they learn and **understand** the mathematical operations 'off by heart' or learn to automaticity.

There is an important difference between the two, which explains why many children have difficulty understanding higher level mathematics in upper primary school.

**Learning X tables – only expect 2 to 3 tables learned each year systematically. If more are 'learned' together, they may not ever be mastered. Children are not mini adults.**

Children cannot learn X2 tables until they can count by groups of two's.

Children cannot learn X3 tables until they can count by groups of 3's. etc

- Children do not learn X tables until Year 3, after they have fully learned the operation of Multiplication.
- **In Year 3-6, X Tables are learned at school, not at home**

**Year 3** Learn skip counting by 2's, then Learn X2 tables

Learn skip counting by 5's, then Learn X5 tables    Revise all

Learn skip counting by 10's, then Learn X10 tables Revise all

**Year 4** Learn skip counting by 3's then learn X3 tables    Revise all

Learn skip counting by 4's then learn X4 tables    Revise all

**Year 5** Learn skip counting by 6's then learn X6 tables    Revise all

Learn skip counting by 7's then learn X7 tables    Revise all

**Year 6** Learn skip counting by 8's then learn X8 tables    Revise all

Learn skip counting by 9's, then learn X9 tables    Revise all

Learn skip counting by 11's then learn X11 tables    Revise all

Learn skip counting by 12's then learn X12 tables.    Revise all

- **Whilst learning X tables**, children should always be able to look at charts if they have not yet learned the answers to automaticity. This will reduce anxiety, avoid errors and improve accurate learning. If you are not sure, it's Ok to have a peep.'

### Fractions

Halves  $\frac{1}{2}$  = 1 part out of two parts, Of one object and groups,  $\frac{1}{2}$  of 6 = \*\*\*/\*\* 3

Teach Quarters  $\frac{1}{4}$  = 1 part out of 4 parts. Fold shape into 4.

Colour 1 part out of 4 =  $\frac{1}{4}$  2 parts out of 4 =  $\frac{2}{4}$  or  $\frac{1}{2}$  3 parts out of 4 parts =  $\frac{3}{4}$

$\frac{4}{4}$  = one whole.

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### Learning Mathematical Relationships between the Four Operations

When children repeatedly see mathematical operations using 3D and 2D objects, with the symbols, they will begin to notice and learn the properties and connections between the mathematical operations.

They do have to experience many examples before they realise these connections, which are most important to know for their later understanding.

They gradually see that E.g.

\*\*\*+\*\*\*  $3+3=6$  is related to \*\*\*/\*\* 2 groups of 3 = 6, and  $6-3=3$

\*\*\*/\*\* 6 how many groups of 3 = 2 and  $\frac{1}{2}$  of 6 = 3 \*\*\*/\*\* and  $2 \times 3=6$

But these operations need to be taught and learned separately before expecting children to mix them or use for problem solving.

#### MEASUREMENT numbers 1-100

**Length** mm 5 cm 5 m 50 cm Teach 100 cm = 1 m

10mm=1cm, 20mm=2cm, 30mm=3cm 40mm=4cm 50mm=5cm, 60mm=6cm, 70mm=7cm, 80mm=8cm, 90mm=9cm, 100mm=10cm.

20+80cm=100cm=1m, 30cm+70cm=100cm=1m, 40cm+60cm=100cm=1m, 50cm+50cm=100cm=1m.

50cm + 20 cm = 70 cm, 25 m + 25 m = 50 m, 50m-20m=30m, 30cm-20cm=10cm.

**Weight** 5 mg 50 g 30g + 50 g =80 g, 100g-70g=30g 10kg+ 15 kg = 25kg

Use balance scales, scales and digital scales. Weigh household items.

**Capacity**= 'How much liquid?' mls 3 litres plus 2 litres = 5 litres etc

30 l + 20 l = 50 l 50 l - 10 l = 40 l 4l X2 = 8l

#### Money

Recognition of all coins and notes \$30+\$40=\$70 \$25+\$35=60 etc

Giving change from \$10 note. spend \$5 = \$10-\$5 = \$5 How much change will I get?

#### Time

3 O'clock = 3:00

Half Hour = half past 2 = 2.30 Other time telling from Years 3-4

Days of week – class calendar, check off days, weeks, birthdays

Months of year – class calendar, check off months, Note the 4 seasons

**Shapes** Recognition, Draw Circles, squares, triangles, rectangles.  
(Year 3 -6 Pentagon, hexagon, octagon, quadrilateral, prism, pyramid.)

#### COMMENT

If children reach the end of Year 2 with full knowledge and understanding of these foundational Mathematical concepts and operations, with sufficient automaticity of basic number facts, then, but only then, they will be well placed to build upon that knowledge from Year 3.

Enjoyment of Mathematics is dependent on understanding and competence.

It may be easy to think that this content is 'too simplistic' and that F-2 children are capable of much more advanced Mathematics.

That will be so for some children, and they can easily be extended.

But for most F-2 children to learn these foundational number concepts and operations, they need to be given enough time and practice to learn at a comfortable pace, which the current F-2 Mathematics Curriculum does not give.

The 46% of 15 -year- old children who failed to reach National Proficiency Standards in 2018 PISA results are the same children who will not have understood these aspects of the F-2 Curriculum.

The reason why many children do not know automatic number facts is because the Mathematics Curriculum and its crowded timetable has not allowed enough time for children to practice and revise to reach automaticity in their learning.

Jo Rogers  
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